

**2008 EIGHT-HOUR OZONE ATTAINMENT PLAN
FOR SAN DIEGO COUNTY**

WORKSHOP DRAFT - AUGUST 2016

**SAN DIEGO COUNTY
AIR POLLUTION CONTROL DISTRICT
10124 OLD GROVE ROAD
SAN DIEGO, CA 92131**

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TABLE OF CONTENTS

	<u>PAGE</u>
1.0 INTRODUCTION AND OVERVIEW	1
1.1 Background.....	1
1.1.1 Ozone	1
1.1.2 Health and Welfare Effects	2
1.1.3 National Ozone Air Quality Standards	2
1.1.4 Ozone Designation Status.....	2
1.1.5 Tribal Nations.....	3
1.2 Emission Control Efforts	3
1.3 Ozone Air Quality Improvement	3
1.3.1 Transported Pollution	4
2.0 GENERAL ATTAINMENT PLAN REQUIREMENTS.....	5
2.1 Emission Inventory	6
2.1.1 Inventory Development Process	6
2.1.2 Inventories for 2012 Base Year and 2017 Attainment Year	6
2.1.3 Emission Budgets	8
2.1.3.1 On-Road Motor Vehicle Emission Budgets for Transportation Conformity	8
2.1.3.2 Military Growth for General Conformity.....	8
2.1.3.3 San Diego International Airport Growth for General Conformity	9
2.1.3.4 Pre-Baseline Banked Emission Credits.....	10
2.1.4 Long-Term Emission Trends	11
2.2 Emission Statement Certification	13
2.3 New Source Review (NSR)	14
3.0 MODERATE AREA ATTAINMENT PLAN REQUIREMENTS	15
3.1 Emission Control Measures.....	17
3.1.1 State and Federal Control Programs	17
3.1.2 Local Control Measures	19
3.2 Reasonably Available Control Measures (RACM) Demonstration	19
3.2.1 RACM Requirements	19
3.2.2 Identifying Potential RACM for Stationary Sources	20
3.2.3 Identifying Potential RACM for Transportation Sources	22
3.2.3.1 Implementation Status of Transportation Control Measures.....	25
3.2.3.2 Emission Reduction Potential of Transportation Control Measures	30
3.2.4 Identifying Potential RACM for Mobile Sources	30
3.2.5 RACM Analysis Conclusion.....	31
3.3 Reasonable Further Progress (RFP).....	31
3.3.1 RFP Requirements	31
3.3.2 RFP Demonstration.....	32

	<u>PAGE</u>
3.4 Attainment Demonstration	33
3.5 Contingency Measures	33
4.0 CONCLUSION	35

ATTACHMENTS

	<u>PAGE</u>
Attachment A Emission Inventories for 2012 and 2017	A-1
Attachment B Planned Military Projects Subject to General Conformity	B-1
Attachment C ARB Control Measures, 1985 to 2015	C-1
Attachment D ARB Analyses of Key Mobile Source Regulations and Programs providing Emission Reductions.....	D-1
Attachment E Pre-Baseline Banked Emission Reduction Credits.....	E-1
Attachment F Analyses of Potential Additional Stationary Source Control Measures	F-1
Attachment G ARB Analyses of Potential Additional Mobile Source Control Measures	G-1
Attachment H Calculation of Cumulative Potential Emission Reductions for Possible Reasonably Available Control Measures (RACM)	H-1
Attachment I Meteorological and Photochemical Modeling – Performance Analysis for the San Diego County 2008 Eight-Hour Ozone State Implementation Plan.....	I-1
Attachment J Graphical Air Quality Trends Analyses	J-1
Attachment K Meteorological Representativeness of Recent Years	K-1

LIST OF FIGURES

	<u>PAGE</u>
Figure 1-1	Emissions, Air Quality, and Growth Trends in San Diego County.....4
Figure 2-1	Ozone Precursor Emissions in San Diego County and South Coast Air Basins.....7
Figure 2-2	VOC Emissions Trend in San Diego County12
Figure 2-3	NOx Emissions Trend in San Diego County12
Figure 3-1	San Diego County Emissions Trends, 2000 to 2035See Supplement
Figure 3-2	San Diego & South Coast Air Basin Emissions Trends, 2000 to 2035See Supplement
Figure 3-3	Eight-Hour Ozone Season at Alpine Monitoring Site, 1997 to 2015See Supplement
Figure D-1	Key Programs to Reduce Light-Duty NOx Emissions..... D-2
Figure D-2	Key Programs to Reduce Heavy-Duty Emissions..... D-5
Figure D-3	Key Programs to Reduce Off-Road Emissions D-8

LIST OF TABLES

	<u>PAGE</u>
Table 2-1 On-Road Motor Vehicle Emission Budgets in San Diego County, For 2017 and Subsequent Years	8
Table 3-1 2012-2017 San Diego County Emission Reductions from Existing State and Federal Control Programs.....	18
Table 3-2 Measures Identified in the 2016 Mobile Source Strategy	19
Table 3-3 Projected Total Daily Emissions in 2016 versus 2017, San Diego and South Coast Air Basins.....	20
Table 3-4 Stationary Source Categories for Which More Stringent Control Requirements Have Been Adopted by Another Air District	22
Table 3-5 Transportation Control Measures listed in CAA §108(f), Implementation Status in San Diego County	24
Table 3-6 RFP Demonstration – 2012 to 2017	33
Table 3-7 Calculation of Model-Predicted 2017 Design Value at the Alpine Monitoring Site	See Supplement
Table 3-8 Projected VOC and NOx Emissions, 2017-2021	34
Table A-1 Emission Inventory of Ozone Precursors in San Diego County for 2012 and 2017	A-1
Table A-2 Emission Inventory of Ozone Precursors in San Diego County and South Coast Air Basin, Combined for 2012 and 2017	A-3
Table B-1 Projected Emissions and Preliminary Schedule for USMC and DoN Projects through 2035	B-1
Table C-1 ARB Control Measures, 1985 to 2015	C-1
Table E-1 District Banking Registry Summary Emission Reduction Credits Issued in 2012 and Earlier	E-1

LIST OF TABLES (continued)

	<u>PAGE</u>
Table F-1	Cost-Effectiveness Range, Further Control of Industrial and Commercial Boilers, Process Heaters, and Steam Generators F-6
Table H-1	Calculation of Cumulative Potential Emission Reductions for Possible Reasonably Available Control Measures (RACM) H-1

1.0 INTRODUCTION AND OVERVIEW

Federal clean air standards have been established for common outdoor air pollutants, including ozone, to protect public health and the environment from the harmful effects of air pollution. These standards, called *National Ambient Air Quality Standards* (NAAQS), are established by the U.S. Environmental Protection Agency (EPA) pursuant to requirements of the federal Clean Air Act (CAA).¹ Each area of the nation with air pollution levels violating a NAAQS must be designated by the EPA as a “nonattainment area” for that pollutant. Each nonattainment area must submit a “State Implementation Plan” (SIP) outlining the combination of local, state, and federal actions and emission control regulations necessary to bring the area into attainment as expeditiously as practicable.

San Diego County is currently designated as a Moderate nonattainment area for the 2008 eight-hour ozone NAAQS. Accordingly, the San Diego County Air Pollution Control District (District) must prepare and submit to the EPA, through the California Air Resources Board (ARB), a SIP identifying control measures and associated emission reductions as necessary to demonstrate attainment by July 20, 2018. This 2008 Eight-Hour Ozone Attainment Plan addresses these requirements.

1.1 BACKGROUND

1.1.1 Ozone

Ozone is a corrosive gas, composed of three oxygen atoms, that is found in two layers of the atmosphere. It occurs naturally in the stratosphere (upper atmosphere) where it absorbs and provides a protective shield against the sun’s damaging ultraviolet radiation. Ozone also exists in the troposphere (lower atmosphere), near ground level, as a result of human activities. “Ground level” ozone—the subject of this Attainment Plan—is an air pollutant that can damage living tissue and break down certain materials.

Ozone is not usually emitted directly into the air, but at ground level is formed by chemical reactions of “precursor” pollutants—oxides of nitrogen (NO_x) and volatile organic compounds (VOC)—in the presence of ultraviolet radiation (strong sunlight). NO_x and VOC emissions are emitted from motor vehicles, industrial plants, consumer products, and many other sources.

Ozone concentrations are usually higher during the spring and summer months. Abundant sunshine promotes ozone formation and warm weather increases VOC emissions from fuel and solvent evaporation. Additionally, warm weather is often associated with stable atmospheric conditions and an inversion layer² in the lower atmosphere, reducing dispersion of ozone.

¹ Federal Clean Air Act requirements are codified, as amended, in the U.S. Code at 42 U.S.C. Sections 7401, et seq.

² An inversion layer is a stable layer of the atmosphere, which does not allow for upward air motion. An inversion often acts like a cap on the atmosphere, trapping air pollution below it.

1.1.2 Health and Welfare Effects

A significant body of research has shown that exposure to unhealthful levels of ozone can cause lung and airway inflammation, significant decreases in lung function and capacity, and other respiratory symptoms such as coughing and pain when taking a deep breath. Ozone exposure is a particular threat during the summer ozone season for people working, exercising, or playing outdoors, or who already have respiratory problems. Long-term exposure to moderate levels of ozone may cause permanent changes in lung structure, leading to premature aging of the lungs and worsening of chronic lung disease. Ozone also impacts the agriculture and forest industries, slowing plant growth and increasing susceptibility to disease, pests, and harsh weather.

1.1.3 National Ozone Air Quality Standards

The 2008 eight-hour ozone NAAQS was established by the EPA in 2008.³ It is attained when the “three year average” of the “annual fourth highest daily maximum” eight-hour average ozone concentration—called the “design value”—is no greater than 0.0759 parts per million (ppm) at each EPA-approved ozone air quality monitor in the region. The “three-year average” and “annual fourth highest daily maximum” are statistical values that provide stability to the standard, moderating the influence of extreme meteorological conditions (over which an area has no control) that could cause the region’s ozone compliance status to vacillate between attainment and nonattainment despite ongoing emission reductions.

On October 26, 2015, the EPA published a final rule in the Federal Register lowering the federal ozone NAAQS standards to a more health-protective 0.070 ppm. The final rule was effective December 28, 2015.⁴ Preliminary state designation recommendations are due to the EPA by October 1, 2016, considering all certified air monitoring data from 2013 to 2015, and any preliminary data from 2016. The EPA anticipates making final designations considering each state recommendation and air monitoring data from 2014 to 2016. Similar to previous ozone standards, it is likely that San Diego County will be designated as a nonattainment area for the more health-protective 2015 eight-hour ozone NAAQS, either as a Marginal or Moderate nonattainment area.

This Attainment Plan addresses statutory requirements for the 2008 eight-hour ozone NAAQS as a Moderate nonattainment area. The emission control measures within this Attainment Plan will complement future efforts to attain the 2015 standard by required statutory deadlines.

1.1.4 Ozone Designation Status

The region’s air quality designations for the NAAQS (attainment, nonattainment, or unclassifiable) are established by federal regulation.⁵ San Diego County was initially designated a Marginal nonattainment area for the 2008 eight-hour ozone NAAQS, effective July 20, 2012. Marginal areas were required to attain the 2008 eight-hour ozone NAAQS by July 20, 2015. Despite substantial air quality progress, the region did not meet this attainment deadline. Consequently, on June 3, 2016, the EPA reclassified San Diego County as a Moderate nonattainment area,⁶ which requires the

³ 73 FR 16483

⁴ 80 FR 65291

⁵ 40 CFR 81.305, “Designation of Areas for Air Quality Planning Purposes – California.”

⁶ 81 FR 26697

District to submit a SIP meeting Moderate area requirements, including a demonstration of attainment by July 20, 2018. This Attainment Plan addresses those requirements.

1.1.5 Tribal Nations

Pursuant to federal requirements, none of the region's Tribal Nations are regulated by the District. Their ozone status does not affect this Attainment Plan, which only applies to non-tribal land.

1.2 EMISSION CONTROL EFFORTS

Air quality control in California is a shared responsibility among federal, state, and local agencies. At the national level, the EPA regulates emissions from off-road equipment and inter-state sources such as ships, trains, aircraft, and out-of-state vehicles. At the state level, the ARB regulates emissions from on-road motor vehicles, off-road vehicles and equipment, fuels, and consumer products.⁷ The District regulates emissions from stationary sources, such as factories, power plants, gasoline stations, and other businesses and industrial operations.⁸ Additionally, the District regulates some areawide sources such as coatings and industrial solvents. As a result of shared efforts, mobile and stationary sources in San Diego County are among the cleanest in the nation.

1.3 OZONE AIR QUALITY IMPROVEMENT

Total regionwide NO_x and VOC emissions have been reduced by over 56% and 44%, respectively, during the 2000-2015 time period (see Section 2.1.4).⁹ Further, ongoing implementation of existing rules and regulations will continue reducing total ozone precursor emissions for the foreseeable future. For example, new lower-emitting sources will replace older, higher-emitting sources at the end of their useful lives.

To gauge the region's progress, measurements of ambient air quality (including ozone levels) are continuously collected at numerous sites in the region.¹⁰ This data demonstrates that San Diego County has achieved a 21% reduction (improvement) in the ozone design value between 2000 and 2015, as depicted in Figure 1-1.

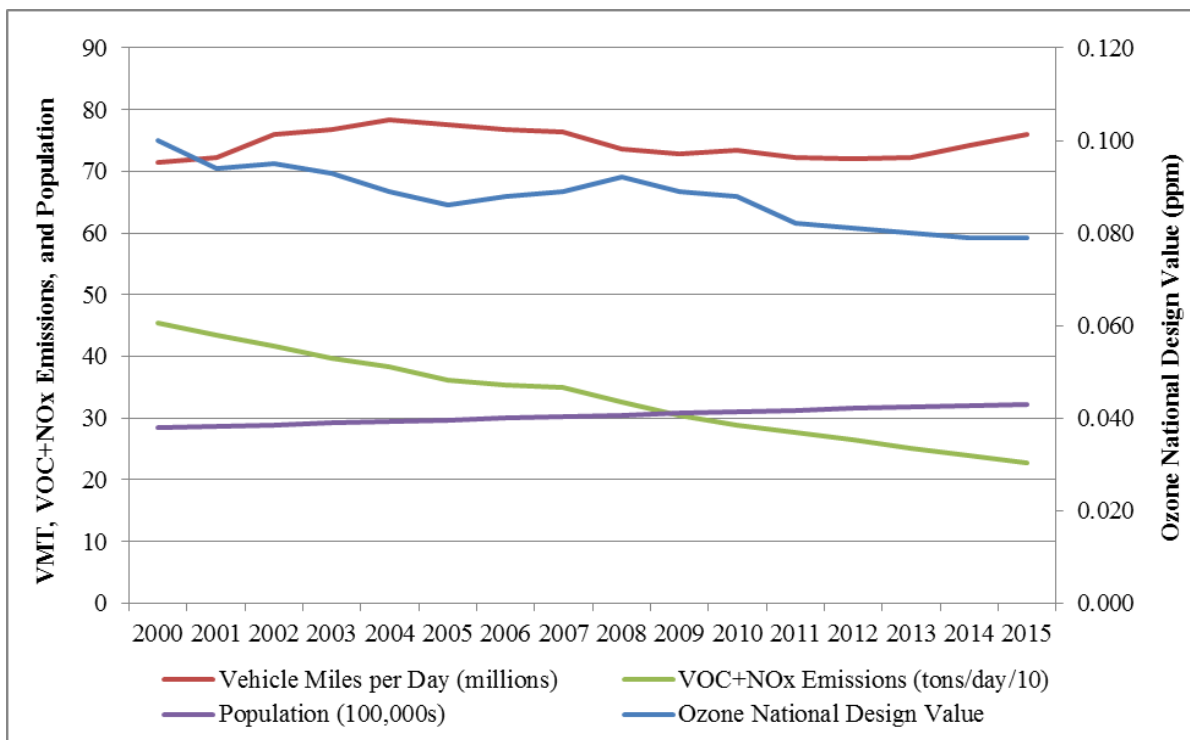
⁷ A comprehensive overview of state regulations is provided in Attachments C and D.

⁸ A comprehensive listing of District rules is included under separate cover in the "2008 Eight-Hour Ozone Reasonably Available Control Technology (RACT) Demonstration for San Diego County."

⁹ Based on the ARB California Emissions Projection Analysis Model (CEPAM) emissions inventory, Version 1.04.

¹⁰ 40 CFR Part 58, "Ambient Air Quality Surveillance."

FIGURE 1-1
Emissions, Air Quality, and Growth Trends in San Diego County



1.3.1 Transported Pollution

San Diego County is located downwind of the South Coast air basin, an Extreme nonattainment area.¹¹ Consequently, emissions from the South Coast can and often do increase ozone levels in the San Diego region. This is reflected in state regulation that identifies areas impacted by transported air pollution.¹²

Importantly, the South Coast Air Quality Management District (SCAQMD) has implemented an effective emissions control program resulting in a long-term trend of emission reductions and air quality improvement in the South Coast region. In turn, air pollution transported to San Diego County has decreased. Nevertheless, transported air pollution will continue to impact San Diego County's ability to expeditiously attain and maintain the 2008 and 2015 ozone NAAQS.

¹¹ The South Coast air basin includes Orange County and the metropolitan portions of Los Angeles, Riverside, and San Bernardino Counties.

¹² California Code of Regulations, Section 70500

2.0 GENERAL ATTAINMENT PLAN REQUIREMENTS

The EPA promulgated the final 2008 eight-hour ozone implementation rule on April 6, 2015, finalizing the planning and emission control requirements that affected regions must address in their implementation plans.¹³ Pursuant to this rule, all nonattainment areas—including San Diego County—are subject to the general planning and emission control requirements of Subpart 2 (Title I, Part D) of the CAA. Subpart 2 requirements have long been implemented in San Diego County pursuant to the region's former status as a Subpart 2/Serious nonattainment area for the former 1979 one-hour ozone NAAQS,¹⁴ and a Subpart 2/Moderate nonattainment area for the former 1997 eight-hour ozone NAAQS.

Subpart 2 general attainment plan requirements consist of the following:

- An **Emission Inventory** (Section 2.1) (CAA Section (§) 182(a)(1)), which is a comprehensive tabulation of air pollutants organized by emission source category. This Attainment Plan includes updated inventories of ozone precursor emissions (VOC and NOx) for the 2012 base year (the year from which future-year inventories are projected)¹⁵ and the 2017 attainment year, representative of a typical summer weekday. Section 2.1 also identifies Emission Budgets for federal regulatory programs known as transportation and general conformity (see Section 2.1.3).
- An **Emission Statement Certification** (Section 2.2) (CAA §182(a)(3)(B)), which states whether the District's existing emission statement reporting rule (Rule 19.3) is sufficient and remains adequate for the purposes of the 2008 eight-hour ozone NAAQS for major sources. This Attainment Plan meets the federal requirement by certifying that the existing rule is sufficient for implementation of the 2008 eight-hour ozone NAAQS.
- A **New Source Review** (NSR) program (Section 2.3) (CAA §182(a)(2)), which is required to address emissions from new sources and major modifications to existing sources. The Attainment Plan meets this requirement through the District's NSR-series rules, which were updated in 2016. The applicability threshold for NSR remains at 50 tons of VOC or NOx per year, and the offset ratio remains at 1.2-to-1. These values are more conservative than required for a Moderate nonattainment area.

¹³ 80 FR 12263

¹⁴ Subpart 2/Serious Nonattainment provisions were fully satisfied in San Diego County pursuant to the 1994 One-Hour Ozone Attainment Plan, approved by the EPA (62 FR 1150). Compliance with Subpart 2 was reaffirmed by the EPA when redesignating the region to a Maintenance Area for one-hour ozone NAAQS (68 FR 13653).

¹⁵ The ARB established 2012 as the emission inventory base year for eight-hour ozone planning purposes, which is the most recent year in which comprehensive emissions estimates was available. See "Transmittal Letter to EPA" Richard Corey, Executive Officer, ARB, July 17, 2014. (http://www.arb.ca.gov/planning/sip/2012iv/ARB_2012O3SIP_transltr_to_EPA.pdf).

2.1 EMISSION INVENTORY

2.1.1 Inventory Development Process

Emission inventories, projections, and trends in this Attainment Plan are based on the latest ozone SIP planning emission projections compiled and maintained by the ARB.¹⁶ Supporting data were jointly developed by stakeholder agencies, including the ARB, the District, SCAQMD, the Southern California Association of Governments (SCAG), and the San Diego Association of Governments (SANDAG). Each agency plays a role in collecting and reviewing data as necessary to generate comprehensive emission inventories. The supporting data includes socio-economic projections, industrial and travel activity, emission factors, and emission speciation profiles.

The ARB compiles annual statewide emission inventories in its emission-related information database, the California Emission Inventory Development and Reporting System (CEIDARS). Emission projections for past and future years are generated using the ARB California Emission Projection Analysis Model (CEPAM), formerly the California Emission Forecasting System (CEFS), to track progress meeting emission reduction goals and mandates. CEPAM utilizes the most current growth and emissions control data available (and agreed upon by the stakeholder agencies) to provide comprehensive projections of anthropogenic (human activity-related) emissions for each year from 2000 to 2035.

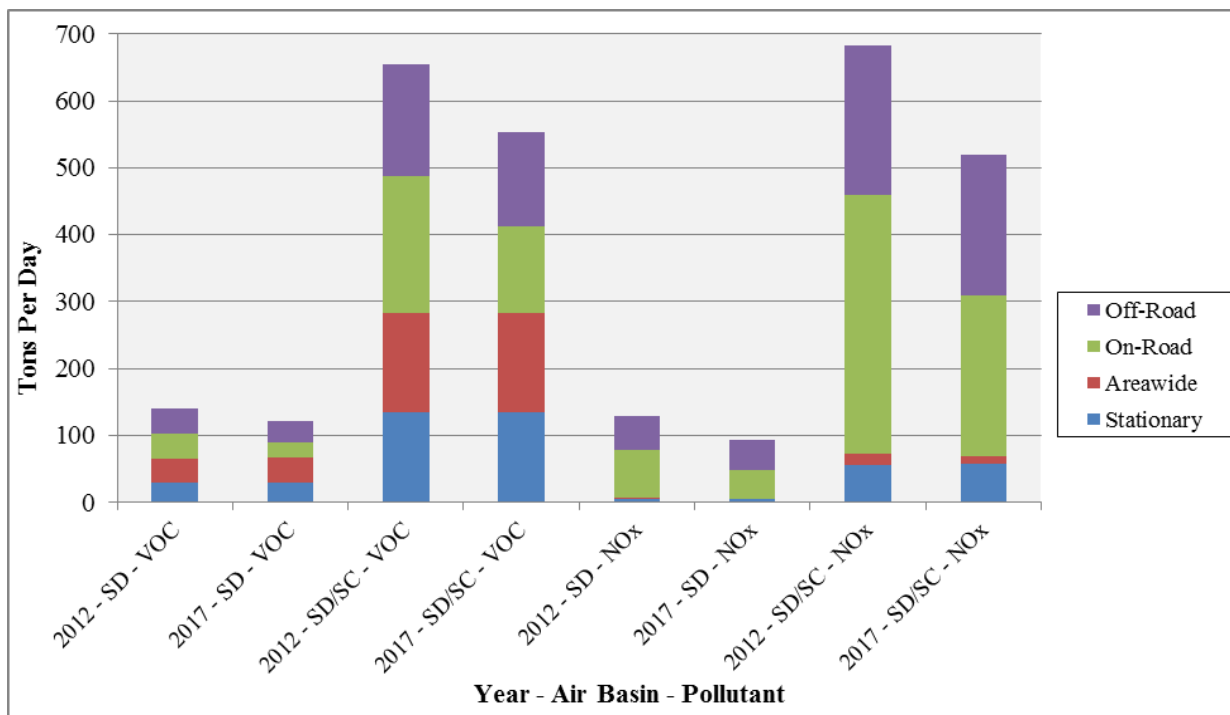
Local air districts are responsible for compiling emissions data for all point sources and many stationary areawide sources. For mobile sources, CEPAM integrates emission estimates from the ARB EMFAC2014 and OFFROAD models. SCAG and SANDAG incorporate data regarding highway and transit projects from their respective Travel Demand Models for estimating and projecting vehicle miles traveled (VMT) and speed. The ARB on-road emissions inventory (EMFAC2014) relies on these VMT and speed estimates. To complete the inventory, estimates of biogenic (naturally occurring) emissions are developed by the ARB using the Biogenic Emissions Inventory Geographic Information System (BEIGIS) model.

2.1.2 Inventories for 2012 Base Year and 2017 Attainment Year

Detailed inventories of VOC and NO_x for the 2012 base year and 2017 attainment year are presented in Attachment A and Figure 2-1. Pursuant to the CAA, the ARB submitted the 2012 baseline emission inventory to the EPA for all California nonattainment areas on July 17, 2014. Consequently, the requirement for submittal of a baseline year emission inventory has been met. The 2012 emission inventory presented in Attachment A of this Plan reflects the submitted data. Since San Diego County's air quality is often affected by transported VOC and NO_x from the South Coast air basin (see Section 1.3.1), both an inventory of San Diego County-only emissions and combined San Diego County plus South Coast air basin emissions are presented. The latter scenario is a general indicator of progress for the South Coast-San Diego County transport couplet.

¹⁶ ARB CEPAM emissions inventory, Version 1.04.

FIGURE 2-1
Ozone Precursor Emissions in San Diego County
and South Coast Air Basins



SD = San Diego Air Basin; SC = South Coast Air Basin
Source: ARB CEPAM emissions inventory, Version 1.04.

2.1.3 Emission Budgets

2.1.3.1 On-Road Motor Vehicle Emission Budgets For Transportation Conformity

The federal transportation conformity regulation¹⁷ requires this Attainment Plan to specify on-road motor vehicle emission budgets for the 2017 attainment year.¹⁸ These emission budgets will also apply to all subsequent transportation conformity analysis years, per the regulation.¹⁹

TABLE 2-1
On-Road Motor Vehicle Emission Budgets in San Diego County
For 2017 and Subsequent Years
(tons per day)

Pollutant	2017 and Subsequent Years
VOC	23
NOx	42

Note: Emission budgets are based on the ARB CEPAM emissions inventory (Version 1.04), which incorporates the EMFAC2014 model and reflect a “summer day.”

The emission budgets presented in Table 2-1 represent the on-road motor vehicle emission levels projected for 2017, as determined using the ARB CEPAM emissions inventory, which incorporates the EMFAC2014 on-road motor vehicle emissions estimation model. Minor budget adjustments were made to account for imprecision in the on-road motor vehicle emissions modeling process.²⁰ The emission budgets are expressed as whole numbers; therefore, on-road motor vehicle emission estimates should be rounded up to the nearest whole number (in tons per day) prior to being compared to emission budgets for transportation conformity determinations.

2.1.3.2 Military Growth for General Conformity

The federal general conformity regulation²¹ and corresponding District Rule 1501²² require federal agencies proposing major federal actions to make a determination that proposed actions will conform to the applicable SIP. Specifically, proposed federal actions may not cause or contribute to a NAAQS violation or interfere with the purposes of the SIP. A method for demonstrating conformity is forecasting and accounting for reasonably anticipated emissions from future actions

¹⁷ 40 CFR 93 (“Determining Conformity of Federal Actions to State or Federal Implementation Plans”).

¹⁸ 40 CFR 93.118 (“Criteria and Procedures: Motor Vehicle Emissions Budget”).

¹⁹ 40 CFR 93.118(b)(2).

²⁰ To establish the emission budgets, the 2017 on-road motor vehicle emissions estimates were adjusted by rounding up to the next whole number. A similar adjustment procedure was previously used in the District’s approved One-Hour Ozone Maintenance Plan, 2007 Eight-Hour Ozone Attainment Plan, and 2012 Eight-Hour Ozone Maintenance Plan.

²¹ 40 CFR 51, Subpart W (“Determining Conformity of General Federal Actions to State or Federal Implementation Plans”).

²² District Rule 1501, “Conformity of General Federal Actions,” approved by the EPA on April 23, 1999 (64 FR 19916).

by federal agencies in the applicable SIP (attainment or maintenance plan).²³

The Department of the Navy (DoN) and United States Marine Corps (USMC) previously developed a projection of future mobile source emissions from anticipated military actions for inclusion in the 1997 Eight-Hour Ozone NAAQS Maintenance Plan (2012). The projection encompassed actions that may occur during the twenty-year maintenance period.²⁴ The emission projections for the Maintenance Plan included a Military Growth Increment of 4.4 tons of NOx per day, and 1.0 tons of VOC per day. For this Attainment Plan, DoN has requested an additional growth increment of 1.51 tons per day of NOx and 0.08 tons per day of VOC (Attachment B). The additional growth accounts for projects that DoN has planned for implementation during the period in which this Attainment Plan is the applicable SIP (prior to attainment and subsequent replacement of this SIP by a new maintenance plan). This includes replacing older aircraft at Naval Air Station North Island with higher-emitting advanced-technology aircraft.

Attachment B presents preliminary schedules for implementation of the planned military projects through 2035. For purposes of analyzing the potential impact of these projects on 2017 ozone attainment, total emissions from full implementation of these projects were conservatively assumed to occur in 2017. The District worked with the ARB to incorporate this growth increment into the CEPAM emissions inventory (Version 1.04) in March 2016; therefore, a total growth allowance of 5.91 tons per day of NOx and 1.08 tons per day of VOC emissions has been incorporated into this Attainment Plan and subsequent modeling by SCAQMD. The analysis indicates this emissions growth allowance can be accommodated, i.e., without causing additional ozone exceedances.²⁵

2.1.3.3 San Diego International Airport Growth for General Conformity

As discussed in Section 2.1.3.2, a method for demonstrating federal general conformity and compliance with Rule 1501 is forecasting and accounting for reasonably anticipated emissions from future actions by federal agencies in the applicable SIP (attainment or maintenance plan). Consequently, the San Diego County Regional Airport Authority (Authority) developed an emission inventory of criteria pollutant emissions at the San Diego International Airport (SDIA)²⁶ for inclusion in this Attainment Plan.

The Authority quantified actual emissions from 2012 for aviation and non-aviation sources on SDIA property, including:

- Aircraft (airborne and ground modes)
- Ground support equipment (GSE)

²³ 40 CFR 51.858(a)(1).

²⁴ “Department of Navy Emissions Growth Increment Request for the San Diego Air Pollution Control District,” Naval Facilities Engineering Command Southwest and Marine Corps Installations West, San Diego County, California, May 24, 2011.

²⁵ Comparison of modeling 2017 air quality with and without planned military projects indicates increases of NOx and VOC emissions would result in slightly higher ozone concentrations.

²⁶ SDIA is San Diego County’s largest commercial service airport, handling more than 190,000 aircraft operations annually. Owned by the Authority, it is considered to be the busiest single-runway airport in the United States. It is located on a 661-acre constrained site in downtown San Diego, three miles west of the downtown business district. In addition to commercial service, SDIA also accommodates the majority of regional cargo demand via passenger airlines (belly cargo) and dedicated all-cargo air carriers.

- Roadways and parking garages
- Construction (current and future)²⁷
- Stationary sources

The Authority estimated future emissions at these sources based on actions anticipated to occur by the region's attainment year (2017) and within a future 20-year maintenance planning period (2020, 2030, and 2040).²⁸ The additional growth accounts for projects SDIA has planned for implementation during the period in which this Attainment Plan is projected to be the applicable SIP.

Some source categories identified in the SDIA inventory not accounted for in the regionwide emission inventory (Attachment A) include Auxiliary Power Units (APU), new jet fuel storage tanks, and large future construction projects planned between 2020 and 2037.²⁹ To analyze the construction projects' potential impact on 2017 ozone attainment, full build-out at SDIA was conservatively assumed to occur in 2017, and accordingly incorporated into the ARB CEPAM emissions inventory (Version 1.04) and the modeling for this Attainment Plan.³⁰

The added emissions growth from SDIA totaled 1.756 tons per day of NO_x, and 0.141 tons per day of VOC.³¹ Analysis indicates this growth allowance can be accommodated without jeopardizing attainment of the 2008 eight-hour ozone NAAQS.³²

2.1.3.4 Pre-Baseline Banked Emission Credits

The District's federally mandated NSR Rules require new and modified major stationary sources that increase emissions in amounts exceeding specified thresholds to provide emission reduction offsets to mitigate their emissions growth. Offsets represent either on-site emission reductions, or the use of banked emission reduction credits (ERCs), which are voluntary, surplus emission reductions previously achieved and registered with the District for future use as offsets. As a result of offset requirements, there should be no net effect on emission inventories from future construction or modifications at major stationary sources; in other words, emission

²⁷ The Authority's Airport Development Plan concludes that substantial site modifications will be necessary to meet expected travel demand and geographical constraints by 2035.

²⁸ LeighFisher. *Emissions Inventory of Airport-Related Sources*. Report. 2016. Print.

²⁹ Table 7-2 of the SDIA inventory identifies 15 major projects targeted for completion by 2040. These include, but are not limited to: (1) demolition and replacement of Terminal 1, (2) construction of additional parking plazas, (3) construction of a temporary runway, and (4) complete reconstruction of the existing runway.

³⁰ These categories include aircraft, roadway/parking garage, construction, and selected stationary sources including boilers, emergency generators, and traffic marking paints. The District compared the regionwide emission inventory (Attachment A) against the SDIA emission inventory to identify discrepancies and overlaps. For example, the regionwide estimate for aircraft emissions in Attachment A already contains an estimate for all aircraft within San Diego County, which includes SDIA as well as other County general aviation airports. Similarly, roadways and parking garage emission estimates identified in the SDIA inventory are already encompassed within the regionwide emission inventory in the On-Road Vehicle category.

³¹ The District voluntarily included approximately 1.3 tons of NO_x per day, and 0.1 tons of VOC per day from 2017 to 2019 for simplicity during the emission inventory incorporation process. In actuality, these emissions are highly unlikely to be emitted prior to 2020. The regionwide estimate for ground support equipment (GSE) was also lower than the estimate submitted in the SDIA inventory, and was accordingly adjusted upward.

³² Comparison of modeling 2017 with and without SDIA emissions indicates increases of NO_x and VOC would result in slightly higher ozone concentrations.

increases that otherwise would be added to the inventory are canceled out by reductions of other emissions in the inventory. The “no net effect on the inventory” result from offsetting new or modified major sources holds true only if the emissions that are reduced to provide offsets remain in the inventory.

To ensure construction or modification of major sources has no net effect on emission inventories used for demonstrating attainment of the 2008 eight-hour ozone NAAQS, banked ERCs derived from pre-2012 emission reductions—which otherwise would not be included as emissions in the baseline and subsequent inventories—must be added back into the inventories, pursuant to federal requirements.³³ Accordingly, Attachment E presents the pre-baseline ERCs currently in the District’s credit bank that have been added to the 2017 attainment year emissions inventory.

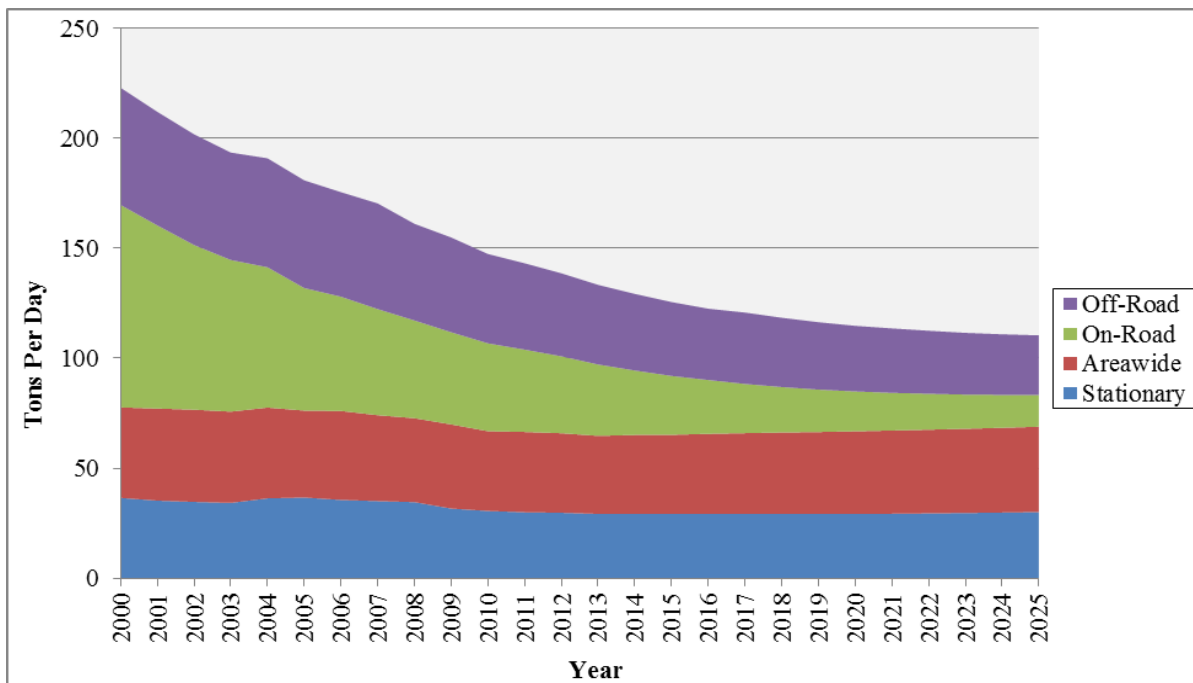
2.1.4 Long-Term Emission Trends

Projected emission reduction trends in San Diego County for VOC and NO_x are illustrated in Figures 2-2 and 2-3, respectively. A 25-year time period, looking back to 2000 and forward to 2025, is presented. Only currently adopted emission control regulations are reflected in future year projections. The resulting data are disaggregated for on-road, off-road, areawide, and stationary source emissions.

As new lower-emitting motor vehicles gradually replace used, higher-emitting vehicles (per state tailpipe regulations), the share of VOC and NO_x emissions from motor vehicles is projected to drop. Stationary source control measures continue to hold stationary source emissions relatively constant despite economic growth. Nevertheless, although not reflected in the figures, future ongoing implementation of the “all feasible control measures” requirement of state law will likely provide further reductions in emissions as additional cost-effective control technologies become available.

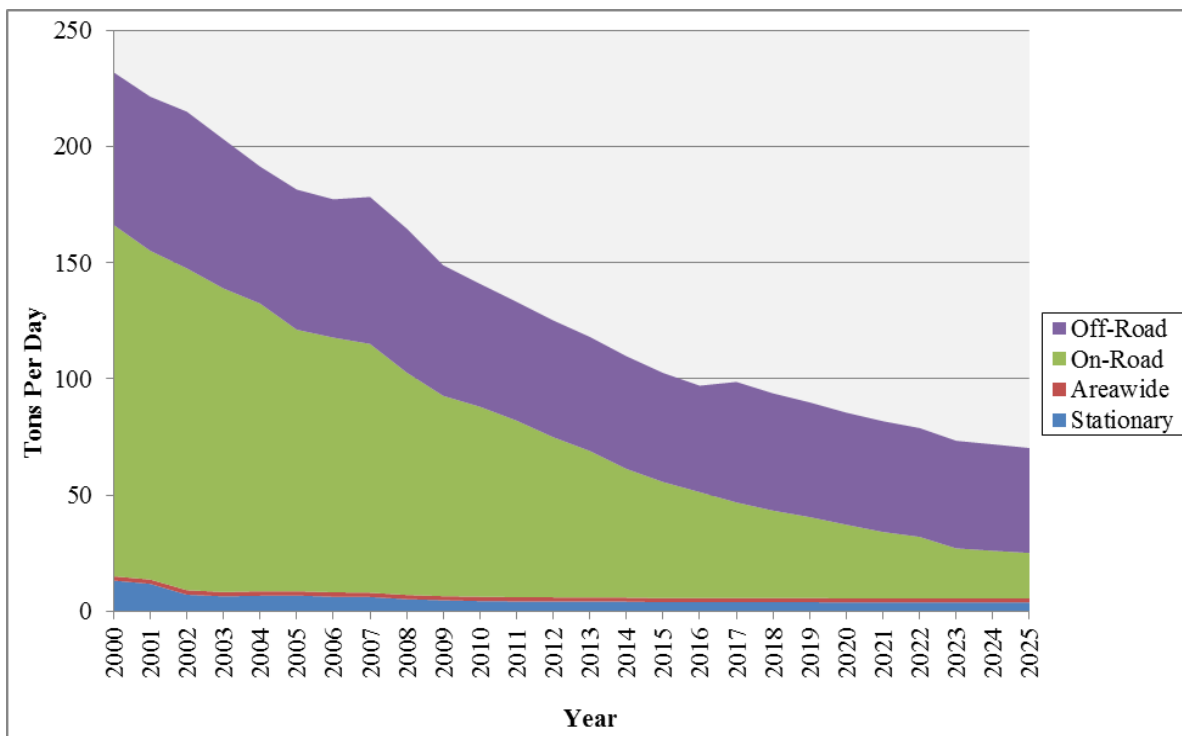
³³ 70 FR 71676.

FIGURE 2-2
VOC Emissions Trend in San Diego County



Source: ARB CEPAM emissions inventory, Version 1.04.

FIGURE 2-3
NOx Emissions Trend in San Diego County



Source: ARB CEPAM emissions inventory, Version 1.04.

2.2 EMISSION STATEMENT CERTIFICATION

CAA §182(a)(3)(B) requires ozone nonattainment areas to mandate submittal of emission statement data from certain sources of VOC or NO_x. The CAA stipulates the following emission statement requirements be met:

CAA Requirements	District Response
<i>“Within two years after November 15, 1990, the state (or District) is required to submit a revision to the State Implementation Plan requiring stationary sources of NO_x or VOC to provide the agency with a statement, in such form as the Administrator may prescribe (or accept an equivalent alternative developed by the state), for classes or categories of sources, showing the actual emissions of NO_x or VOC from that source.” (CAA §182(a)(3)(B)(i))</i>	Rule 19.3 adopted April 6, 1993; Rule 19.3 amended May 15, 1996; Amended Rule 19.3 promulgated into SIP on March 9, 2000 (65 FR 12472).
<i>“Submittal of the first statement was required to be submitted within three years after November 15, 1990. Submittal of subsequent statements is required at least every year thereafter.” (CAA §182(a)(3)(B)(i))</i>	The District reports emission data electronically to the EPA through the ARB on an annual basis. Data has been submitted annually since 1993.
<i>“Statements shall contain a certification that the information contained in the statement is accurate to the best knowledge of the individual certifying the statement.” (CAA §182(a)(3)(B)(i))</i>	Each statement contains a certification that the information contained in the statement is accurate to the best knowledge of the completer.
<i>“The state (or District) may elect to waive the application of clause (i) to any class or category of stationary sources which emit less than 25 tons per year of VOC or NO_x if the state provides an inventory of emissions from such class or category of source, based on the use of the emission factors established by the Administrator or other methods acceptable to the Administrator.” (CAA §182(a)(3)(B)(ii))</i>	N/A

The 2008 eight-hour ozone standard implementation rule³⁴ acknowledges that if an area has a previously approved emission statement rule in force for the former 1997 eight-hour or 1979 one-hour ozone NAAQS, the existing rule is likely sufficient for meeting the emission statement requirement for the 2008 eight-hour ozone NAAQS. The District adopted Rule 19.3 (Emission Statement) on April 6, 1993, and amended it on May 15, 1996, to cover all of San Diego County. The nonattainment area for San Diego County has not been significantly modified since that time. Additionally, the implementation rule recommends that air districts review the existing rule to ensure adequacy in the form of a written statement to the EPA.

The District reviewed Rule 19.3 for adequacy, pursuant to the CAA requirements and subsequent EPA guidance and associated memoranda.³⁵ The rationale is specified in the table above. Consequently, the District determines that existing Rule 19.3 meets all federal CAA requirements set forth in the implementation rule. The District certifies that Rule 19.3, as promulgated into the SIP on March 9, 2000, remains adequate for the purposes of implementing the 2008 eight-hour ozone NAAQS.

³⁴ 80 FR 12263

³⁵ Guidance on the Implementation of an Emission Statement Program – Draft. July, 1992.

http://www3.epa.gov/ttn/chief/eidocs/draft-implement_jul1992.pdf.

“Emission Statement Requirement Under 8-hour Ozone NAAQS Implementation” Memorandum. March 14, 2006.

http://www3.epa.gov/ttnchie1/eidocs/eiguid/8hourozone_naaqs_031406.pdf

2.3 NEW SOURCE REVIEW (NSR)

NSR rules are required by CAA §182(c)(10) for new or modified major stationary sources of VOC or NOx. For purposes of implementing the 2008 eight-hour ozone NAAQS, NSR rules must have applicability thresholds and offset ratios at least as stringent as mandated in the CAA for the nonattainment area's classification. Initially, San Diego County was designated under Subpart 2 as a Marginal nonattainment area, mandating the applicability threshold for VOC and NOx emissions at 100 tons per year, and an offset ratio of at least 1-to-1. With the recent reclassification of the region to Moderate, the same applicability threshold for VOC and NOx emissions applies (100 tons per year), but the required offset ratio increased to 1.15-to-1.

The District's NSR rules (Rules 20.1 – 20.4) were initially adopted in 1998 when San Diego County was classified as a Serious nonattainment area for the former 1979 one-hour ozone NAAQS. The NSR rules were never approved in the SIP due to regulatory complications. With a goal to achieve SIP-approval of a current set of NSR rules and replace the outdated versions, the District again revised NSR Rules 20.1-20.4 on April 27, 2016. The revisions reflect a renewed effort to address past and current EPA-identified rule deficiencies, CAA and EPA regulatory requirements, and state guidance regarding Senate Bill (SB) 288 requirements. In addition, the revisions reflect changes to ambient air quality standards, the attainment/nonattainment status of the San Diego air basin, incorporation of greenhouse gas requirements, and experience implementing the 1998 NSR rules. The applicability threshold in the NSR rules adopted in 2016 is 50 tons per year and the offset ratio is 1.2-to-1. Both values exceed the requirements for a Moderate nonattainment area. The rules also require Lowest Achievable Control Technology and other requirements mandated for nonattainment areas.

The revised rules strengthen the District's NSR program within the San Diego portion of the California SIP. Accordingly, the District certifies that the recently adopted NSR rules are sufficient for the purposes of the 2008 eight-hour ozone NAAQS, and fulfills the requirements of a Moderate nonattainment area under Subpart 2.

3.0 MODERATE AREA ATTAINMENT PLAN REQUIREMENTS

As previously discussed, the EPA's 2008 eight-hour ozone implementation rule requires that all nonattainment areas — including San Diego County — comply with planning and emission control requirements found in CAA Subpart 2 (Title I, Part D). Since San Diego County was recently reclassified as a Moderate nonattainment area for the 2008 eight-hour ozone NAAQS, additional planning and emission control demonstrations are necessary to comply with the CAA, beyond the General elements specified in Section 2.0 of this Plan. These additional Moderate nonattainment area requirements include the following:

- A summary of **Emission Control Measures** (Section 3.1) identifying a comprehensive set of stationary and mobile source control measures necessary to achieve attainment of the 2008 eight-hour ozone NAAQS as expeditiously as practicable. A summary of the measures is not required by the CAA, but is necessary to understand the region's comprehensive strategy for attainment.
- An analysis of **Reasonably Available Control Measures** (RACM) (Section 3.2) (CAA §172(c)), to verify that all RACM (including stationary, transportation-related, and mobile) are being implemented as expeditiously as practicable. The stringency and comprehensiveness of adopted control requirements on emission sources in San Diego County significantly reduce the availability of new measures that could provide additional emission reductions sufficient to advance the attainment year. This Attainment Plan's RACM analysis demonstrates there are no additional economically and technologically feasible control measures (alone or in conjunction with others) that could advance the attainment year from 2017 to 2016.
- A **Reasonably Available Control Technology** (RACT) Demonstration (CAA §182(b)(2)), to determine whether the control measures relied on in this Attainment Plan meet RACT requirements.³⁶ Subpart 2 nonattainment areas classified as Moderate or above must reevaluate and assure RACT requirements are met for each applicable category of VOC and NOx stationary sources.³⁷ RACT is federally defined as the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility. RACT is further defined as being necessary for all sources of VOC or NOx subject to an EPA Control Techniques Guideline (CTG), or major sources of VOC or NOx that are not subject to a CTG. The District's RACT Demonstration can be found under separate cover in the *"2008 Eight-Hour Ozone Reasonably Available Control Technology (RACT) Demonstration for San Diego County."*
- A demonstration of **Reasonable Further Progress** (RFP) (Section 3.3) (CAA §182(b)(1)), which is required pursuant to the EPA's implementation rule for areas classified as Moderate or above.³⁸ The CAA requires such areas to demonstrate RFP for the six-year period

³⁶ 40 CFR 51.912(a).

³⁷ RACT compliance options for Subpart 2 areas include (1) certifying that ongoing RACT rules for one-hour ozone implementation represent RACT for eight-hour ozone purposes; or (2) making a new RACT determination and any associated rule revisions.

³⁸ 40 CFR 51.910(a)(i).

referenced in CAA §182(b)(1), beginning on January 1 of the year following the emission inventory base year (i.e. January 1, 2013). The six-year period would normally conclude on January 1, 2019. However, this date goes beyond the region's Moderate attainment deadline of July 20, 2018. Additionally, San Diego County's baseline emission inventory is 2012 instead of 2011. In such circumstances, the EPA has allowed regions to demonstrate RFP over five years instead of six. Thus, the RFP Demonstration for San Diego County concludes on January 1, 2018 (i.e. 2017 ozone season), and must provide for a 15% emission reduction during 2012-2017. Due to the EPA's previous approval of the region's 15% VOC rate-of-progress demonstration³⁹ in 1997,⁴⁰ the RFP demonstration for this Attainment Plan may use either NO_x or VOC reductions to demonstrate the 15% reduction.

- An **Attainment Demonstration** (Section 3.4) (CAA §182(c)(2)(A)), developed pursuant to federal requirements, which is comprised of photochemical air quality simulation modeling and other approved analytical techniques (collectively called the "Weight of Evidence"). Together, these analyses demonstrate the ability of the Emission Control Measures (Section 3.1) to provide for attainment of the 2008 eight-hour ozone NAAQS as expeditiously as practicable. Ozone nonattainment areas are required to model attainment in the ozone season⁴¹ prior to the area's attainment date.⁴² For San Diego County, the demonstrated attainment year is 2017 as a Moderate nonattainment area, representing the first full ozone season prior to the July 20, 2018, attainment date.
- **Contingency Measures** (Section 3.5) (CAA §179(c)(9)), which must be implemented in the event of failure to achieve RFP milestones or to attain the NAAQS by the attainment deadline. The Contingency Measures requirement is intended to ensure emission reduction progress continues while the failure is being corrected. Typically, contingency measures are held in reserve and implemented only if required. However, California's stringent emissions control program and on-going emissions reduction trend create a unique situation, allowing this Attainment Plan to identify several mobile source control regulations as contingency measures that will be implemented regardless of contingency measure requirements. These measures provide additional emission reductions beyond those relied on in the Attainment Demonstration.
- **Additional Subpart 2 Requirements** have long been implemented in San Diego County, pursuant to the region's former status as a Serious nonattainment area for the former 1979 one-hour ozone NAAQS.⁴³ These requirements continue to be implemented in the region and are required under federal anti-backsliding provisions. These include the following:
 - Enhanced vehicle inspection and maintenance program (CAA §182(c)(3));

³⁹ 40 CFR 51.910(b)(2)(ii).

⁴⁰ 62 FR 1150

⁴¹ San Diego County's ozone season (when eight-hour ozone exceedances can be expected) has long been specified in federal regulation (40 CFR Part 58, Appendix D, Section 2.5) as January through December. However, based on eight-hour ozone levels in recent years, the region's ozone season is more likely May through September. Regardless, for purposes herein, the full ozone season remains January through December.

⁴² 40 CFR 51.908(d).

⁴³ Subpart 2/Serious Nonattainment provisions were fully satisfied in San Diego County pursuant to the 1994 One-Hour Ozone Attainment Plan, approved by EPA (62 FR 1150). Compliance with Subpart 2 was reaffirmed by EPA when redesignating the region to a Maintenance Area for one-hour ozone (68 FR 13653).

- Stage II gasoline vapor recovery (CAA §182(b)(3));
- Reformulated gasoline (CAA§211(k));
- Periodic emissions inventory and source emission statement regulations (CAA §182(a)(3)); and
- Enhanced ambient monitoring (Photochemical Assessment Monitoring Stations (PAMS), CAA §182(c)(1)).

3.1 EMISSION CONTROL MEASURES

Over the past two decades, ozone air quality in San Diego County has improved significantly due to comprehensive control measures implemented to reduce pollution from mobile and stationary emission sources (see Section 1.3). Ongoing implementation of existing District, state, and federal regulations will provide additional reductions in ozone precursors for the foreseeable future (see Sections 2.1.4 and 3.4.4.8 for emission trends), and are a primary basis for this Attainment Plan. Currently adopted rules and regulations at the state and federal levels (Section 3.1.1), combined with local control measures (Section 3.1.2), are collectively referred to as “Emission Control Measures.”

3.1.1 State and Federal Control Programs

The ARB is responsible for numerous emission control regulations, including those addressing consumer products and mobile sources (except where federal law preempts the ARB’s authority). The ARB also develops fuel specifications, adopts statewide control measures for air toxics, establishes gasoline vapor recovery standards, and certifies vapor recovery systems. The agency has regulated mobile sources since the 1960s and consumer products since the early 1990s, and has continued to further control and tighten those regulations many times over the years.

Other state agencies, such as the Department of Pesticide Regulation (DPR) and the Bureau of Automotive Repair (BAR), also regulate emissions through their respective roles. DPR is responsible for control of agricultural, commercial and structural pesticides. BAR runs the state’s Smog Check programs to identify and repair higher polluting cars.

At the national level, the EPA is authorized to control emissions from mobile sources, including sources under exclusive federal jurisdiction (such as interstate trucks, some farm and construction equipment, locomotives, aircraft, and marine vessels based in the U.S.). International organizations also develop standards for aircraft and marine vessels that operate outside the U.S. Federal agencies have the lead role in representing the U.S. in the development of international standards.

Attachments C and D list the suite of ARB-implemented regulations in place since 1985. The regulations have helped the region attain the former 1979 one-hour and 1997 eight-hour ozone NAAQS, as well as support the effort to attain the 2008 eight-hour ozone NAAQS. With the assistance of these regulations, daily ozone precursor emissions are projected to decrease by more than 47 tons between 2012 and 2017, as presented in Table 3-1. This equates to an approximate 21% reduction in VOC and NO_x emissions in the specified source categories.

TABLE 3-1
2012-2017 San Diego County Emission Reductions from
Existing State and Federal Control Programs (tons per day)

Source Category	VOC Reductions	NOx Reductions
Consumer Products	0.4	0.0
On-road Motor Vehicles	12.6	27.7
Commercial Boats	0.0	0.9
Recreational Boats	3.5	0.4
Res/Ind/Const Equipment	1.2	-0.3
Farm Equipment	0.1	0.4
Gasoline Cans	0.5	0.0
Pesticides	0.1	0.0
TOTAL	18.4	29.1

Source: ARB CEPAM emissions inventory, Version 1.04.

Negative numbers represent a minor emission increase in the selected categories.

Significant progress and reductions have already been achieved through these existing measures. However, the ARB has acknowledged that further reductions are necessary in the San Joaquin and South Coast air basins to meet the 2008 (and future 2015) eight-hour ozone NAAQS. To address this situation, the ARB developed a 2016 Mobile Source Strategy that contains additional local, state, and federal measures that will provide substantial emission reductions beyond current conditions when fully implemented, and significantly improve air quality. These measures, identified in Table 3-2, will either be implemented nationally, statewide or targeted specifically for certain regions, such as the South Coast air basin. Emission reductions in the South Coast region will also benefit San Diego County, which frequently receives transported pollution from the South Coast air basin.

TABLE 3-2
Measures Identified in the 2016 Mobile Source Strategy

New Measures	Implementing Agency	Expected Action	Expected Implementation
On-Road Light Duty			
Advanced Clean Cars 2	ARB	2020	2026
In-Use Performance Assessment	ARB/BAR	N/A	Ongoing
Further Deployment of Cleaner Technologies	ARB/Local	Ongoing	2016
On-Road Heavy-Duty			
Lower In-Use Emission Performance Level	ARB	2016	2017
Low-NOx Engine Standard – California Action	ARB	2017 - 2019	2023
Low-NOx Engine Standard – Federal Action	EPA	2017 – 2019	2024
Medium and Heavy-Duty GHG Phase II	ARB/EPA	2016 – 2019	2018
Advanced Clean Transit	ARB	2017	2018
Last Mile Delivery	ARB	2018	2020
Innovative Technology Certification Flexibility	ARB	2016	2016
Zero Emission Airport Shuttle Buses	ARB	2018	2023
Incentive Funding to Achieve Further Emission Reductions from On-Road Heavy-Duty Vehicles	ARB/Local	Ongoing	2016
Further Deployment of Cleaner Technologies	ARB/Local	Ongoing	2016
Off-Road Federal and International Sources			
More stringent National Locomotive Emissions Standards	EPA	2016	2023
Tier 4 Vessel Standards	ARB/IMO	2015 – 2018	2025
Incentivize Low Emission Efficient Ship Visits	ARB	2017 – 2018	2018
At-Berth Regulation Amendments	ARB	2017 – 2018	2022
Further Deployment of Cleaner Technologies	EPA/ARB/Local	Ongoing	2016
Off-Road Equipment Sources			
Zero Emission Off-Road Forklift Regulation Phase 1	ARB	2020	2023
Zero Emission Off-Road Emission Reduction Assessment	ARB	2025	-
Zero Emission Off-Road Worksite Emission Reduction Assessment	ARB	TBD	-
Zero Emission Airport Ground Support Equipment	ARB	2018	2023
Small Off-Road Engines	ARB	2018	2022
Transport Refrigeration Units Used for Cold Storage	ARB	2017 – 2018	2020
Low-Emission Diesel Requirement	ARB	By 2020	2023
Further Deployment of Cleaner Technologies	ARB/Local	Ongoing	2016

Source: “Mobile Source Strategy,” ARB. May, 2016.

3.1.2 Local Control Measures

A comprehensive listing of District rules is included under separate cover in the “2008 Eight-Hour Ozone Reasonably Available Control Technology (RACT) Demonstration for San Diego County.” These rules apply to many stationary and areawide sources, which include but are not limited to: factories, power plants, chemical plants, landfills, gas stations, dry cleaners, coating operations, stationary engines, boilers, and furnaces. These rules are implemented through District permits that are specific to each facility or operation, and stipulate the conditions that must be met to ensure compliance. Periodic inspections at the facilities are also conducted by District staff to verify ongoing compliance.

3.2 REASONABLY AVAILABLE CONTROL MEASURES (RACM) DEMONSTRATION

3.2.1 RACM Requirements

The CAA requires a demonstration that all reasonably available control measures are being

implemented as expeditiously as practicable. Specifically, the air district must consider a wide range of potential additional measures (beyond those already being implemented) to further control emissions from stationary, transportation, and mobile sources. A potential additional measure is considered "reasonably available" and thus must be implemented if it, (alone or in combination with other feasible measures), would advance attainment by one year (i.e., from 2017 to 2016). (In other words, the reasonably available measures would need to reduce emissions to 2017 levels by 2016.) Based on the analysis herein, the District finds that there are no potential additional measures that can reduce emissions to 2017 levels by 2016.

As mentioned in Section 1.3.1, transport from the South Coast region frequently contributes to high ozone levels in San Diego County. Accordingly, this RACM analysis has been evaluated using projected emissions from the San Diego County-South Coast transport couplet. Table 3-3 identifies the increment of emission reductions needed in 2016 for San Diego County to reach attainment. Specifically, 13.4 tons per day of additional VOC reductions and 19.9 tons per day of additional NOx reductions (33.3 tons total) would be necessary in 2016 to advance the attainment year from 2017 to 2016 in San Diego County. These emission reduction values account for the impact of transported emissions from the South Coast region, as well as locally generated emissions in San Diego County.

TABLE 3-3
Projected Total Daily Emissions in 2016 versus 2017
San Diego and South Coast Air Basins

VOC Emissions (tons per day)			NOx Emissions (tons per day)		
2016	2017	Difference	2016	2017	Difference
566.9	553.5	13.4	539.7	519.8	19.9

Source: ARB CEPAM emissions inventory, Version 1.04.

3.2.2 Identifying Potential RACM for Stationary Sources

Identifying additional control measures for consideration as potential RACM is challenging in San Diego County because the District is already required to adopt every feasible control measure as expeditiously as practicable, in response to the stringent requirements of state law. These existing measures usually fulfill federal RACT requirements for sources covered by a CTG, or for any major stationary source of VOC and/or NOx.⁴⁴ The District continues to implement all feasible control measures to control emissions from stationary source categories in the County. Most rules have been submitted into the SIP (or will be submitted concurrent to this Attainment Plan and corresponding RACT Demonstration), to fulfill federal requirements for RACT.

Additionally, state law requires Best Available Retrofit Control Technology (BARCT), which is more stringent than RACT. Accordingly, the District already adopted BARCT level of control for sources subject to state requirements. The District's existing BARCT rules cannot be considered as potential RACM because they have already been implemented and would not provide new additional emission reductions that could advance the attainment year.

⁴⁴ See "2008 Eight-Hour Ozone Reasonably Available Control Technology (RACT) Demonstration for San Diego County."

To identify potential RACM, the District has relied on an ongoing control measure evaluation process required under state law to adopt all feasible measures. Specifically, the District is required to consider, for each emission source category, whether adopting some or all of the requirements of the most stringent adopted rule in the state would be feasible for local sources.

The District's review of other air district rules identified several source categories (Table 3-4) that contain more stringent requirements than current District rules. All but one has been adopted in Extreme ozone nonattainment areas, which far exceed San Diego County's classification as a Moderate nonattainment area. Table 3-4 also estimates the implementation period (in years) that would be necessary to fully realize the emission reductions if the more stringent controls were adopted locally. The one-to-three year implementation periods indicated for VOC control measures, and the one-to-20 year implementation periods for NOx control measures, represent the time necessary to obtain lower emitting materials, install control equipment, and/or replace existing units at the end of their useful lives. Thus, even if all measures were adopted concurrent with this Attainment Plan in 2016 (which is not feasible due to the lead time necessary for rule development and adoption), the reductions could not be fully realized before the beginning of 2016. Consequently, these measures are not available for advancing the attainment year to 2016.

A detailed analysis of each of the potential control measures identified in Table 3-4 is presented in Attachment F. The analysis concludes that, if all such stationary measures were adopted, an additional 3.75 tons of VOC reductions per day and 1.62 tons of NOx reductions per day could be expected.

TABLE 3-4
Stationary Source Categories for Which More Stringent Control Requirements
Have Been Adopted by Another Air District

Control Measure	San Diego Rule Number	Other Air District Rule Number*	Estimated Emission Reduction Potential (Tons/Day) VOC	Estimated Emission Reduction Potential (Tons/Day) NOx	Implementation Period (Years)
Receiving and Storing Volatile Organic Compounds at Bulk Plants and Bulk Terminals	61.1	SC 1178	0.03		3
Transfer of Organic Compounds into Mobile Transport Tanks	61.2	SJV 4621 SJV 4622	0.01		1
Architectural Coatings	67.0.1	SC 1113	2.4		1
Aerospace Coating Operations	67.9	SC 1124 SJV 4605	0.005		1
Graphic Arts Operations	67.16	SC 1130 SJV 4607	0.05		1
Marine Coating Operations	67.18	SC 1106	0.01		1
Adhesive Material Application Operations	67.21	SC 1168 SJV 4653	0.9		1
Composting Operations	No comparable rule	SC 1133.3	0.3		1
Industrial and Commercial Boilers, Process Heaters and Steam Generators	69.2	SJV 4306		0.1	2
Small Boilers, Process Heaters, and Steam Generators	69.2.1	SJV 4308		0.80	15 **
Natural Gas-Fired Fan-Type Central Furnaces	69.6	SC 1111		0.46	10 **
Equipment Leaks	No comparable rules	BA 8-18	0.01		1
Commercial Food Ovens		SC 1153.1		0.01	10 **
Food Products Manufacturing/Processing		SC 1131	0.03		1
Medium Boilers, Process Heaters, and Steam Generators		SC 1146.2		0.25	20 **
TOTAL EMISSION REDUCTIONS			3.745	1.62	

* SC = South Coast Air Quality Management District; BA = Bay Area Air Quality Management District; SJV = San Joaquin Valley Air Pollution Control District;

** Emissions reductions would occur gradually, as new low-emitting units replace existing higher-emitting units at the end of their useful lives.

3.2.3 Identifying Potential RACM for Transportation Sources

Potential RACM also include Transportation Control Measures (TCMs), which are strategies to reduce motor vehicle trips, vehicle miles traveled, or vehicle idling and associated air pollution. Table 3-5 lists the 16 TCMs identified in CAA §108(f) and their implementation status in San Diego County. A discussion of each TCM, further describing the status of implementation, follows Table 3-5.

As indicated, 13 of the 16 TCMs have been implemented, including transit and traffic flow improvements, ridesharing, high occupancy vehicle (HOV) lanes, pedestrian-only streets, control of extended idling, and seven other measures. The agencies responsible for developing and implementing these TCMs include SANDAG (the transportation planning agency for the San Diego region) and other state and local agencies.

Five of the implemented TCMs — TCMs 1, 3, 5, 8, and 10 — were included in the 1982 SIP Revision for San Diego County.⁴⁵ Descriptions herein of any ongoing implementation beyond the 1982 SIP commitments do not constitute submittal of additional implementation commitments into the SIP. Such submittal would be required only if the TCMs meet the RACM qualifications specified in Section 3.2.1. TCMs that have already been implemented cannot provide additional emissions reductions in 2016 sufficient to advance the attainment year from 2017 to 2016. Therefore, they cannot be considered RACM.

Table 3-5 and the subsequent discussion also address the three TCMs that have not been implemented and the reasons for non-implementation. These measures address trip-reduction ordinances, peak-period vehicle restrictions, and vehicle emissions in extremely cold environments.

⁴⁵ In the 1982 SIP, TCMs 3 and 8 were combined into one comprehensive TCM, the “Ridesharing” TCM.

TABLE 3-5
Transportation Control Measures listed in CAA §108(f)
Implementation Status in San Diego County

Transportation Control Measures	Implemented	In 1982 SIP
1. Programs for improved public transit	Yes	Yes
2. Restriction of certain roads or lanes to, or construction of such roads or lanes for use by, passenger buses or high occupancy vehicles	Yes	
3. Employer-based transportation management plans, including incentives	Yes	Yes
4. Trip-reduction ordinances	No*	
5. Traffic flow improvement programs that achieve emission reductions	Yes	Yes
6. Fringe and transportation corridor parking facilities serving multiple occupancy vehicle programs or transit service	Yes	
7. Programs to limit or restrict vehicle use in downtown areas or other areas of emission concentration particularly during periods of peak use	No	
8. Programs for the provision of all forms of high-occupancy, shared-ride services	Yes	Yes
9. Programs to limit portions of road surfaces or certain sections of the metropolitan area to the use of non-motorized vehicles or pedestrian use, both as to time and place	Yes	
10. Programs for secure bicycle storage facilities and other facilities, including bicycle lanes, for the convenience and protection of bicyclists, in both public and private areas	Yes	Yes
11. Programs to control extended idling of vehicles	Yes	
12. Programs to reduce motor vehicle emissions, consistent with Title II, which are caused by extreme cold start conditions	Not Applicable	
13. Employer-sponsored programs to permit flexible work schedules	Yes	
14. Programs and ordinances to facilitate non-automobile travel, provision and utilization of mass transit, and to generally reduce the need for single- occupant vehicle travel, as part of transportation planning and development efforts of a locality, including programs and ordinances applicable to new shopping centers, special events, and other centers of vehicle activity	Yes	
15. Programs for new construction and major reconstructions of paths, tracks or areas solely for the use by pedestrian or other non-motorized means of transportation when economically feasible and in the public interest	Yes	
16. Program to encourage the voluntary removal from use and the marketplace of pre-1980 model year light duty vehicles and pre-1980 model light duty trucks	Yes	

*Adopted in 1994, but rescinded in 1995 when federal and state laws were amended eliminating the mandate for such measures.

3.2.3.1 Implementation Status of Transportation Control Measures

TCM 1 – Improved Public Transit

The Transit measure commitments included in the 1982 SIP were fully implemented by 1995. Total regional transit rail and bus ridership in FY 2015 (107 million) represents an increase of more than 23% since FY 2004. Bus revenue miles⁴⁶ in San Diego County increased six percent since FY 2004-2005, totaling over 30.9 million miles in 2015. Concurrently, rail transit services have continued to improve. The light rail San Diego Trolley,⁴⁷ SPRINTER,⁴⁸ and COASTER⁴⁹ commuter rail service, have together increased to over 10.6 million revenue car miles in 2015. In addition, total passengers per revenue mile (a measure of system productivity) have increased by more than 23% over that same period.

The Trolley Renewal Project, completed in 2015, funded the purchase of 65 new, low-floor trolley cars that are easier to board (especially for persons with disabilities) and provide better operations in the downtown area. Several stations along the lines required renovation for easier and safer access to the new cars. Additionally, pre-construction activities have begun for an 11-mile extension to the Blue Line (“Mid-Coast Trolley Extension”), with revenue service anticipated to begin in 2021. Ridership along the 22-mile SPRINTER rail line connecting Oceanside to Escondido has also steadily increased since opening in 2008.

San Diego County’s Bus Rapid Transit (BRT) service (“Rapid”) started revenue service in 2014. BRT service utilizes standard and articulated compressed natural gas (CNG) buses to provide fast, limited-stop, service in the Interstate 15 (I-15) and Mid-City corridors utilizing freeway managed lanes and arterial transit priority measures to improve speed and travel time reliability. Construction on an additional 26-mile South Bay Rapid route connecting Otay Mesa, Chula Vista, and downtown San Diego began in 2016. Revenue service is anticipated to begin in 2018. The region’s two operators also continue to make improvements to the local bus system, with higher frequency service on several lines.

While many areas of San Diego County have developed around low-density, auto-oriented development patterns, local jurisdictions have been updating their general plans to shift development toward urban areas and along existing and planned rail/Rapid bus corridors. The transit strategy included in SANDAG’s San Diego Forward: The Regional Plan (Regional Plan) focuses transit improvements in Regional Smart Growth centers and key corridors, to provide transportation options and greater connectivity. Several major transit improvements are planned for the near-term, and the system will continue to mature over the life of the Regional Plan.

TCM 2 – High Occupancy Vehicle (HOV) Lanes

Currently, there are three freeways in the San Diego region with HOV lanes: I-5 (San Diego Freeway), I-805 (Jacob Dekema Freeway), and I-15 (Escondido Freeway). Additional HOV lanes are currently under construction on I-805.

The I-5 HOV lane extends 7.8 miles from the I-5/I-805 junction to just south of Manchester Avenue.

⁴⁶ Revenue (car) miles are the total distance that a fleet travels while available for passenger service.

⁴⁷ The San Diego Trolley is a 54-mile light rail transit system serving southern San Diego County.

⁴⁸ The SPRINTER is a 22-mile light rail line, connecting Oceanside to Escondido that began service in January 2008.

⁴⁹ The COASTER is a 42-mile passenger rail line between Oceanside and downtown San Diego that began service in 1996.

The current configuration of the I-805 HOV lane is segmented, consisting of ten miles between Mira Mesa Boulevard and Manchester Avenue at I-5, and another eight miles between East Naples Street and State Route (SR) 94. The I-15 Express Lanes extend 20 miles from SR 163 to just south of SR 78. Direct access is available at the north and south ends, and Direct Access Ramps are available at Hale Avenue, Del Lago Boulevard, West Bernardo Drive, SR 56/Ted Williams Parkway, and Hillary Drive. Intermediate Access Points that provide direct access from the main lanes to the Express Lanes are approximately every two to three miles. Vehicles with two or more occupants (or powered by certain alternative fuels), buses, and motorcycles may use the I-15 Express Lanes for free, and solo drivers participating in the FasTrak® Program may use the Express Lanes for a per-trip toll. Finally, a buses-only northbound lane on SR 163, extending 0.4 miles from A Street in downtown San Diego to I-5, enables buses to bypass general purpose traffic entering SR 163.

Other HOV Lane development in the region includes:

- Metered Ramps. HOV preferential lanes are provided at 181 (57%) of the 318 metered ramps on the region's freeways. The HOV preferential lanes do not bypass the meters but they do provide a shorter queue, reducing travel time.
- I-15 Express Lanes. The region has committed \$1.4 billion to the I-15 Express Lanes project to ease traffic congestion in the I-15 corridor from SR 163 to SR 78 in Escondido. Construction began in November 2003 with the middle segment being completed in 2009 and the north and final segment being completed in 2012.

The project includes four lanes with a moveable median barrier to accommodate two to three lanes in the peak direction and one to two lanes in the opposite direction. The Express Lanes facility provides priority to HOVs such as carpools and vanpools, regular transit services, and the BRT system. Excess capacity in these lanes is "sold" to solo drivers for a fee, as is the case with the FasTrak® program. The Express Lanes are separated from the general purpose lanes by a barrier, with access provided every two to three miles.

- I-5 North Coast Express Lanes. This project will be modeled after the I-15 Express Lanes project. The I-5 North Coast Express Lanes will feature multiple access points to/from the facility to the general purpose lanes and direct access ramps that connect local arterials directly to the Express Lanes facility. A number of project alternatives are under study, including value pricing.⁵⁰
- Managed Lanes/HOV Network. SANDAG's 2050 Regional Transportation Plan (RTP), has developed a robust Managed Lane (Express Lane)/HOV network. Shared by highway and transit users, the Managed Lanes/HOV system will be expanded from the current 28 miles to 158 miles in the future. The 2050 RTP includes:
 - Four-lane Managed Lane facilities on I-5, I-15, and I-805 with value pricing;
 - Two-lane Managed Lane facilities on SR 52, SR 54, SR 78, SR 94, and SR 125; and
 - In addition to mainline Managed Lane improvements, the Plan includes direct HOV to HOV connectors at the I-5/I-805 merge, and at eight other interchanges where major

⁵⁰ Variable tolls for solo drivers based on traffic congestion in the general lanes.

HOV facilities intersect.

TCM 3 – Employer-Based Transportation Management Plans

In the 1982 SIP, the Employer-Based Transportation Management Plans measure (TCM 3) was combined with the Shared-Ride Services measure (TCM 8) to form a more comprehensive measure, the “Ridesharing” TCM. The Ridesharing TCM commitments included in the 1982 SIP were fully implemented by 1988.

Traffic Abatement Plan requirements of District Rule 132 were included as part of the Ridesharing TCM. Pursuant to federal requirements for abating air pollution emergency episodes,⁵¹ employer-based Traffic Abatement Plan measures are triggered by ozone levels exceeding 0.35 ppm. No ozone concentrations of this level or higher have been recorded in San Diego County since 1979.

TCM 4 – Trip-Reduction Ordinances

A regional trip-reduction ordinance was adopted by the District as part of the 1994 Ozone SIP, but was rescinded in 1995 when federal and state laws were amended, eliminating the mandate for such measures based on public opposition.

TCM 5 – Traffic Flow Improvements to Reduce Emissions

Traffic Flow Improvements mostly consist of traffic signal improvements to reduce idling and associated emissions. The Traffic Flow Improvements TCM commitments included in the 1982 SIP were fully implemented by 1990.

Further implementation of the Traffic Flow Improvements TCM continues. All federally funded traffic signal projects selected with the federal transportation funding program (TEA-21) have been implemented (117 projects). The 2014 Regional Transportation Improvement Plan (RTIP) includes two state funded projects, as well as 22 locally funded traffic signal improvements. These projects are also inclusive of the Regional Arterial Management System (RAMS) program. This program includes the installation of the regional traffic signal management software and linking of the local agencies to a common system. The system was recently launched and is now being implemented by local agencies throughout the County, with assistance from SANDAG.

TCM 6 – Park-and-Ride Facilities

Currently, there are 65 Park-and-Ride lots in the San Diego region, with 4,092 spaces available. More lots are anticipated as funding becomes available. In addition, transit parking at commuter rail stations has been developed and is currently available at six stations, with 6,300 spaces available. The San Diego Trolley also provides parking at over half (28) of its stations, with 9,700 confirmed spaces and an undetermined amount of shared-use parking. The SPRINTER rail line also offers parking at 13 stations, accommodating approximately 1,500 parking spaces.

TCM 7 – Peak-Period Vehicle Restrictions in Downtown Areas

This measure is feasible only in high-density portions of compact metropolitan areas with an extensive transit system. Given the San Diego region’s historically low-density land use pattern, and therefore longer transit travel times, this measure is not yet feasible. However, SANDAG’s

⁵¹ 40 CFR 51.150 et seq.

Smart Growth Incentive Program provides funding to cities for infrastructure projects which enhance alternatives to driving in higher density areas.

TCM 8 – Shared-Ride Services

As mentioned above, in the 1982 SIP, TCM 8 was combined with TCM 3 in a “Ridesharing” TCM. The Ridesharing TCM commitments included in the 1982 SIP were fully implemented by 1988.

Further implementation of the Shared-Ride Services TCM continues. SANDAG partners with the “511” transportation information service in support of “iCommute” (<http://www.icommutesd.com>), the regional transportation demand management program charged with providing shared-ride services and education to employers and individuals on all ridesharing and biking options. Example services include:

- Carpool Ride Matching Service – computerized ride-matching.
- Guaranteed Ride Home Service – qualifying ride sharers are provided with three vouchers per year for taxi fares, or 24-hour rental cars to travel home to address a personal unscheduled event.
- Promotion of Teleworking and Alternative Work Schedules (see TCM 13) – iCommute works with employers and employees to create programs offering alternative work arrangements (such as flex time and teleworking) to reduce commute trips and peak hour traffic congestion.
- Park and Ride Programs (see TCM 6) – Caltrans and other agencies provide Park-and-Ride facilities, which are promoted by iCommute.
- Vanpool Program – SANDAG operates a Regional Vanpool Program. As of March 2016, 720 vanpools were operating in the San Diego region, carrying 5,459 passengers, a 37% increase over 2006 levels. Additional vanpools are anticipated as SANDAG expands its marketing efforts to the region’s large employers. iCommute promotes the SANDAG vanpool program.

TCM 9 – Road Surface Restrictions for Motor Vehicles in Metro Areas

Numerous examples of road surface restrictions exist in the San Diego region. In downtown San Diego, portions of C Street are limited to the Trolley and pedestrian use, and a block of B Street was closed and transformed into the Civic Center Concourse. In Old Town San Diego State Historic Park, portions of San Diego Avenue, Calhoun Street, and Mason Street have been restricted to pedestrian-only use. In Balboa Park, the eastern end of El Prado is also restricted to pedestrian-only use. North of Sorrento Valley, a segment of Sorrento Valley Road is closed to traffic and reserved for bicycle and pedestrian uses. Additionally, in downtown Escondido, a one-block section of Maple Street was reconfigured to create a pedestrian plaza between W. Grand Ave and W. Valley Parkway when needed. This measure is also implemented on a limited or recurring temporary basis for certain recreational areas, weekly farmer’s markets, and yearly festivals/street fairs.

TCM 10 – Bicycle Facilities

The Bicycling TCM commitments included in the 1982 SIP were fully implemented by 1995. However, further implementation of the Bicycling TCM continues. The bikeway system currently includes 1,136 miles of bikeways in the San Diego region, consisting of Class I (exclusive bicycle path separated from roadway), Class II (striped on-street bicycle lane), and Class III (shared with motor vehicles) facilities. Additionally, front-mounted bike racks are available on nearly all transit buses. Bikes are also allowed on all light rail cars in the County network.

In September 2013, the SANDAG Board of Directors approved a \$200 million Regional Bike Plan Early Action Program that focuses on the region's highest priority bicycle corridors. As of July 2014, SANDAG is also implementing approximately 35 miles of regional bikeway projects that are in various phases of planning, preliminary engineering, design and construction.

SANDAG also maintains a system of over 850 bike locker spaces available throughout the region at most Trolley stations, all COASTER stations, and select Park-and-Ride locations. Currently, 306 spaces are electronic, on-demand spaces. All remaining locker spaces will be converted to electronic, on-demand spaces over the next four years. Unlike conventional lockers assigned to a single user, the converted spaces are available any time they are not in use to anyone participating in the bike locker program. Consequently, each converted space will serve three to five times as many commuters as a non-converted unit.

TCM 11 – Idling Controls

The ARB has adopted several diesel-fueled vehicle idling limitation programs, which include but are not limited to:

- School buses (www.arb.ca.gov/toxics/sbidling/sbidling.htm);
- On-road trucks (<http://www.arb.ca.gov/msprog/truck-idling/factsheet.pdf>);
- Off-road equipment (<http://www.arb.ca.gov/enf/advs/advs377.pdf>); and,
- Locomotives (www.arb.ca.gov/railyard/ryagreement/ryagreement.htm)

More information is available on the ARB website at the specified web addresses.

TCM 12 – Vehicle Cold Start Emissions in Extreme Cold Conditions

This measure is not applicable due to the mild climate in the San Diego region.

TCM 13 – Flexible Work Schedules

This measure has been implemented by the iCommute program, as previously identified under TCM 8 (see <http://www.icommutesd.com/telework/telework-default>). Staff from iCommute work with employers and employees to create programs for offering alternative work arrangements (such as flex time and teleworking) to reduce commute trips and peak hour traffic congestion.

TCM 14 – Programs and Ordinances Facilitating Non-Automotive Travel

This measure has been implemented in San Diego County via the progressive iterations of the RTP, adopted by SANDAG, which includes investments in public transportation, bike paths, and pedestrian improvements. These include a greater reliance on non-automotive travel through increased development densities, more mass transit usage, and increased bicycling and walking for transportation. Pursuant to the Regional Plan, SANDAG has designated existing and potential Smart Growth Areas, and provides funding incentives for local jurisdictions to increase densities and provide for mixed uses and additional transit, bicycling and walking facilities in these areas. Most of the region's local jurisdictions have adopted general plans consistent with this approach. Developers in the region have responded to these policies, and to market forces, by initiating a number of large-scale smart growth developments. Thousands of new units have also been added to existing communities well-served by transit and amenable to non-motorized travel.

Additionally, in 2004, voters extended the region's half-cent sales tax ordinance for transportation ("TransNet"), and added additional funding categories such as the Smart Growth Incentive Program, and improvements to transit, bicycling, and pedestrian facilities. The ordinance requires routine accommodation of these modes for all TransNet-funded local roadway projects.

TCM 15 – Paths or Areas Encouraging Non-Motorized Travel

The San Diego region has implemented an extensive network of bicycling facilities, many of which also serve pedestrians. Three regional, multi-use trails are still under development— the Bayshore Bikeway (26 miles around the San Diego Bay), the Inland Rail Trail (22 miles from the Escondido Transit Center to the Oceanside Transit Center), and the Coastal Rail Trail (44 miles from northern Oceanside to downtown San Diego). These three trails are expected to be used by commuters as well as recreational users. Additionally, due to land use plans, regional transportation funding formulas, and the nature of the housing market, a number of new smart growth developments have been built which include paths and trails that encourage non-motorized travel (see TCM 14).

TCM 16 – Removal of Older, Higher-Polluting Light Duty Vehicles

Under a program administered by the District using Vehicle Registration Fee funds, a total of 4,277 older vehicles were permanently retired through 2005, resulting in an estimated reduction of 470 tons of ozone-precursor emissions. Further, a state-run vehicle retirement program continues, administered by the California Department of Consumer Affairs' Bureau of Automotive Repair (http://www.smogcheck.ca.gov/Consumer/Consumer_Assistance_Program/).

3.2.3.2 Emission Reduction Potential of Transportation Control Measures

Trip Reduction Ordinances alone (TCM 4) have been estimated to reduce on-road vehicle emissions by less than two percent.⁵² That analysis also estimated that all other TCMs combined would not be more effective than Trip Reduction Ordinances (i.e., would not provide combined emission reductions exceeding two percent). Consequently, it is assumed that the maximum emission reduction potential of implementing all unimplemented TCMs (TCMs 4, 7, and 12) would be two percent of on-road vehicle emissions. Projected on-road motor vehicle emissions in San Diego County in 2017 are approximately 22.4 tons of VOC per day and 41.2 tons per day of NOx (see Table A-1 in Attachment A). Therefore, the maximum emissions reduction potential of implementing all unimplemented TCMs, assuming a two percent reduction in on-road emissions, is an estimated 0.4 tons per day reduction of VOC emissions, and 0.8 tons per day reduction of NOx emissions.

3.2.4 Identifying Potential RACM for Mobile Sources

Most California regions face challenges in reducing emissions from mobile sources. Over one-third of total daily ozone-precursor emissions in Southern California are attributable to mobile sources. Given the severity of these air quality challenges, the ARB has implemented one of the most stringent mobile source emissions control programs in the nation.

⁵² "Transportation Control Measures for the Air Quality Plan," San Diego Association of Governments, 1992.

The ARB maintains regulatory authority over most mobile sources in California, which include: light, medium, and heavy-duty on-road vehicles, off-road equipment, motorcycles, recreational boats, cargo handling equipment, commercial harbor craft, and the fuels powering mobile equipment. Measures usually take a comprehensive approach to reduce emissions by continually establishing stringent engine standards, deadlines for procurement, fuel specifications, and incentive programs to encourage early adoption of lower-emitting equipment. Many California air districts rely on mobile source emission reduction measures to achieve timely attainment of state and federal air quality standards. Consequently, most ARB measures are as stringent as practicable and cannot provide additional reductions to advance attainment by one year.

An analysis reviewing possible RACM for mobile sources in the San Diego region was completed by the ARB (see Attachment G). The analysis concluded that the current California mobile source control program has no additional reasonably available measures (and consequently, no additional emission reductions) that could advance San Diego County's attainment of the 2008 eight-hour ozone NAAQS by one year.

3.2.5 RACM Analysis Conclusion

The combination of potential additional stationary source measures (Table 3-4), transportation measures (Table 3-5), and mobile source measures, if implemented, could provide a total of 6.6 tons of VOC and NO_x reductions per day. This combined value falls short of the 33.3 tons of VOC and NO_x reductions per day necessary to advance attainment from 2017 to 2016. Furthermore, to be considered reasonably available, these additional measures would need to have been adopted at the beginning of the 2016 ozone season (i.e. January 1, 2016), which has already passed. Therefore, none of the potential additional control measures are considered reasonably available, and therefore, none require adoption for the purposes of this RACM analysis and Attainment Plan.

3.3 REASONABLE FURTHER PROGRESS (RFP)

3.3.1 RFP Requirements

CAA §172(c)(2) and §182(b)(1) requires nonattainment areas to show continual progress ("Reasonable Further Progress," or RFP). RFP is defined in CAA §171(1) as annual incremental reductions for the purpose of ensuring attainment by the region's attainment year (2017). This requirement for emission reductions between the baseline year and attainment year ensures that nonattainment areas will not delay implementation of emission control programs until immediately prior to the attainment deadline. The region must achieve annual reductions in emissions as necessary to attain the applicable standard.

An RFP Demonstration must meet two requirements outlined in the CAA. First, Moderate or above nonattainment areas must demonstrate a one-time 15% reduction in VOC-only emissions during a six-year period following enactment of the 1990 CAA amendments. This requirement was previously fulfilled with the District's Attainment Plan for the former 1979 one-hour ozone

NAAQS.⁵³ The second condition requires a Moderate or above nonattainment area to reduce VOC and/or NOx emissions by at least 15% from the baseline year (2012) to the attainment year (2017).⁵⁴

Additionally, CAA §172(c)(9) requires that attainment plans provide for contingency measures in case the area fails to demonstrate RFP. The EPA has interpreted this requirement to represent one year's worth of emission reduction progress, amounting to a three percent reduction, from measures that are already in place or that would take effect without further rulemaking action. This requirement is addressed in Section 3.5 of this Attainment Plan.

3.3.2 RFP Demonstration

Table 3-6 demonstrates that a 19% reduction of forecasted VOC and NOx emissions from existing control measures are projected to occur between 2012 and 2017. Both VOC and NOx emission reductions are necessary to meet the RFP reduction targets. NOx substitution was used on a percentage basis to cover a two percent shortfall in VOC reduction. Therefore, the RFP requirement (15% reductions in VOC and/or NOx) is met.

⁵³ The EPA's final implementation rule for RFP concludes that if the EPA has already approved a rate-of-progress plan (15% VOC-only) for the federal one-hour ozone standard, the region is not required to demonstrate another 15% of VOC-only emissions in attainment plans for the eight-hour ozone standard. The EPA approved the San Diego County one-hour ozone 15% VOC rate-of-progress analysis required by the CAA in 1997 (62 FR 1150). Consequently, San Diego County has satisfied the first component of RFP.

⁵⁴ The RFP analysis normally addresses a six-year period starting from the baseline year (2012). In San Diego County's case, the six-year period goes beyond the region's attainment date as a Moderate nonattainment area (July 20, 2018). Therefore, the time period analyzed is condensed to demonstrate the required 15% VOC and/or NOx through the region's attainment year (2017).

TABLE 3-6
RFP Demonstration – 2012 to 2017

Line	Year	2012	2017
A	Baseline VOC (tons/day)	137.8	119.9
B	Required % change since previous milestone year (VOC or NOx)		15%
C	Require % change since 2012 (VOC or NOx)		15%
D	Target VOC level (tons/day)		117.1
E	Shortfall (-)/Surplus (+) in VOC reductions needed to meet target (tons/day)		-2.8
F	Shortfall (-)/Surplus (+) in VOC reductions needed to meet target (%)		-2.0%
G	VOC reductions since 2012 used for contingency in this milestone year (%)		0.0%
H	VOC reductions shortfall previously provided by NOx substitution (%)		0.0%
I	Actual VOC reductions Shortfall (-)/Surplus (+)		-2.0%
Line	Year	2012	2017
J	NOx (with existing measures) (tons/day)	109.6	82.8
K	Change in NOx since 2012 (tons/day)		26.8
L	Change in NOx since 2012 (%)		24.5%
M	NOx reductions since 2012 already used for VOC substitution & contingency through last milestone year (%)		0.0%
N	NOx reductions since 2012 available for VOC substitution & contingency in this milestone year (%)		24.5%
O	NOx reductions since 2012 used for VOC substitution in this milestone year (%)		2.0%
P	NOx reductions since 2012 used for contingency in this milestone year (%)		3.0%
Q	NOx reductions since 2012 surplus after meeting VOC substitution & contingency needs in this milestone year (%)		19.4%
R	RFP Shortfall (-) in reductions needed to meet target (if any) (%)		0.0%
S	Total Shortfall (-) for RFP and contingency (if any) (%)		0.0%
T	RFP Met?		YES
U	Contingency Met?		YES

Source: ARB. August, 2016. Emission data obtained from ARB CEPAM emission inventory (Version 1.04), San Diego Air Basin, Summer Day.

3.4 ATTAINMENT DEMONSTRATION

[See “Attainment Demonstration Supplement” under separate cover.]

3.5 CONTINGENCY MEASURES

Contingency Measure requirements are not included in the Code of Federal Regulations, but are discussed in Section III.H of the 2008 eight-hour ozone implementation rule. Nonattainment areas are required to adopt contingency measures to be implemented in the event of failure to meet a RFP milestone, or to attain the 2008 eight-hour ozone NAAQS. It should be noted that the CAA requires states to identify contingency measures that will go into effect without further action on the part of the state or the EPA.

Since existing mobile source control measures are projected to continue providing significant emission reductions for many years beyond the 2017 attainment year as newer vehicles enter the fleet, this Attainment Plan relies on the continuing emission reductions from those existing mobile

source control measures to fulfill the Contingency Measures requirement. These measures will continue to be implemented regardless of the air basin's attainment status in 2018.

As indicated in Table 3-8, existing mobile source control regulations will continue reducing San Diego County total VOC emissions between 2017 and 2021 by an estimated 1.5 percent per year, and NOx emissions by about 4.6 percent per year. Such continuing emission reductions are ample to ensure reasonable further progress will continue to be achieved in the event the area fails to attain the 2008 eight-hour ozone NAAQS by the required deadline.

TABLE 3-8
Projected VOC and NOx Emissions, 2017-2021 (tons per day)

	VOC					NOx				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
Stationary Sources	29.2	29.2	29.1	29.2	29.3	4.0	4.0	4.0	3.9	3.9
Areawide Sources	36.7	37.0	37.3	37.6	37.9	1.7	1.8	1.8	1.8	1.8
On-road Mobile Sources	22.4	20.7	19.3	18.1	17.1	41.2	37.7	34.9	31.7	28.5
Off-road Mobile Sources	32.5	31.5	30.7	29.9	29.3	51.8	50.4	49.3	48.2	47.6
Total	120.8	118.4	116.4	114.8	113.6	98.7	93.9	90.0	85.6	81.8
Reduction		2.4	2.0	1.6	1.2		4.8	3.9	4.4	3.8
Percent Reduction		2.0%	1.7%	1.4%	1.0%		4.9%	4.2%	4.9%	4.4%

Source: ARB CEPAM emissions inventory, Version 1.04.

4.0 CONCLUSION

Pursuant to CAA requirements and EPA guidance, the District has conducted numerous and diverse analyses—including the Modeled Attainment Test and several analyses of air quality, emissions, and meteorological data—to judge whether timely attainment of the 2008 eight-hour ozone NAAQS as a Moderate nonattainment area in San Diego County is likely. The results of the modeling and Weight of Evidence analyses, on balance, provide persuasive support to a conclusion that the Emission Control Measures defined in this Plan are sufficient to continue reducing ozone concentrations throughout San Diego County to the level of the 2008 eight-hour ozone NAAQS by the conclusion of the 2017 ozone season.

ATTACHMENT A **EMISSION INVENTORIES FOR 2012 AND 2017**

Table A-1
Emission Inventory of Ozone Precursors in San Diego County
for 2012 and 2017 (tons per day)

SOURCE CATEGORY	VOC	VOC	NO _x	NO _x
	2012	2017	2012	2017
ELECTRIC UTILITIES	0.0659	0.0522	0.5229	0.4138
COGENERATION	0.0431	0.0431	0.2186	0.2186
MANUFACTURING AND INDUSTRIAL	0.0824	0.0711	0.9111	0.8569
FOOD AND AGRICULTURAL PROCESSING	0.0243	0.0133	0.3172	0.157
SERVICE AND COMMERCIAL	0.2318	0.2345	1.0666	1.0959
OTHER (FUEL COMBUSTION)	0.0848	0.0744	0.8561	0.7223
SEWAGE TREATMENT	0.0249	0.0255	0.0702	0.0688
LANDFILLS	2.0673	2.153	0.2245	0.2327
INCINERATORS	0.0001	0.0001	0.0033	0.0035
SOIL REMEDIATION	0	0	0	0
OTHER (WASTE DISPOSAL)	0.248	0.2597	0	0
LAUNDERING	0.0973	0.1019	0	0
DEGREASING	1.494	1.5307	0	0
COATINGS AND RELATED PROCESS SOLVENTS	6.8601	7.2515	0	0
PRINTING	4.3291	4.5334	0	0
ADHESIVES AND SEALANTS	2.4423	2.6133	0	0
OTHER (CLEANING AND SURFACE COATINGS)	0.1141	0.1211	0	0
PETROLEUM MARKETING	8.5397	6.2675	0.0077	0.0076
OTHER (PETROLEUM PRODUCTION AND MARKETING)	0.0003	0.0003	0	0
CHEMICAL	2.0918	2.5728	0	0
FOOD AND AGRICULTURE	0.0518	0.0578	0	0
MINERAL PROCESSES	0.1916	0.2258	0.1597	0.1881
METAL PROCESSES	0.0078	0.0082	0.0056	0.006
GLASS AND RELATED PRODUCTS	0	0	0	0
ELECTRONICS	0	0	0	0
OTHER (INDUSTRIAL PROCESSES)	0.6273	1.0195	0.0297	0.0482
STATIONARY SUBTOTAL	29.7198	29.2307	4.3932	4.0194
CONSUMER PRODUCTS	17.8551	17.4811	0	0
ARCHITECTURAL COATINGS AND RELATED PROCESS SOLVENTS	11.6644	12.0917	0	0
PESTICIDES/FERTILIZERS	0.6722	0.6053	0	0
ASPHALT PAVING / ROOFING	1.8278	2.2633	0	0
RESIDENTIAL FUEL COMBUSTION	0.5092	0.5243	1.6754	1.6663
FARMING OPERATIONS	1.2683	1.2683	0	0
CONSTRUCTION AND DEMOLITION	0	0	0	0
PAVED ROAD DUST	0	0	0	0
UNPAVED ROAD DUST	0	0	0	0
FUGITIVE WINDBLOWN DUST	0	0	0	0
FIRES	0.0478	0.0496	0.0166	0.0172
MANAGED BURNING AND DISPOSAL	0.2398	0.2357	0.0587	0.0568
COOKING	2.1104	2.2101	0	0
OTHER (MISCELLANEOUS PROCESSES)	0	0	0	0
AREAWIDE SUBTOTAL	36.195	36.7294	1.7507	1.7403
LIGHT DUTY PASSENGER (LDA)	13.4101	8.1149	9.2372	6.0312
LIGHT DUTY TRUCKS - 1 (LDT1)	3.9641	2.2734	2.2048	1.1031
LIGHT DUTY TRUCKS - 2 (LDT2)	5.2567	3.4507	5.4295	2.8487
MEDIUM DUTY TRUCKS (MDV)	3.9665	3.1215	4.973	2.9666
LIGHT HEAVY DUTY GAS TRUCKS - 1 (LHDV1)	1.4769	1.0111	1.9154	1.2258

Table A-1 (continued)
Emission Inventory of Ozone Precursors in San Diego County (tons per day)

SOURCE CATEGORY	VOC	VOC	NOx	NOx
	2012	2017	2012	2017
LIGHT HEAVY DUTY GAS TRUCKS - 2 (LHDV2)	0.1628	0.1096	0.2361	0.1672
MEDIUM HEAVY DUTY GAS TRUCKS (MHDV)	0.3843	0.1546	0.5482	0.3026
HEAVY HEAVY DUTY GAS TRUCKS (HHDV)	0.0581	0.0231	0.1191	0.0787
LIGHT HEAVY DUTY DIESEL TRUCKS - 1 (LHDV1)	0.2359	0.2002	5.5782	3.6632
LIGHT HEAVY DUTY DIESEL TRUCKS - 2 (LHDV2)	0.065	0.0598	1.4393	0.8749
MEDIUM HEAVY DUTY DIESEL TRUCKS (MHDV)	0.7119	0.3324	8.6859	5.2719
HEAVY HEAVY DUTY DIESEL TRUCKS (HHDV)	1.509	0.3999	21.8555	12.2446
MOTORCYCLES (MCY)	3.168	2.8077	0.7579	0.6752
HEAVY DUTY DIESEL URBAN BUSES (UB)	0.2648	0.1641	3.8569	2.3215
HEAVY DUTY GAS URBAN BUSES (UB)	0.038	0.0226	0.0654	0.0529
SCHOOL BUSES - GAS (SBG)	0.0521	0.0106	0.0465	0.0214
SCHOOL BUSES - DIESEL (SBD)	0.0386	0.0104	0.5451	0.5
OTHER BUSES - GAS (OBG)	0.0524	0.0368	0.1486	0.0939
OTHER BUSES - MOTOR COACH - DIESEL (OBC)	0.0255	0.0082	0.3579	0.2409
ALL OTHER BUSES - DIESEL (OBD)	0.0357	0.0073	0.4304	0.2276
MOTOR HOMES (MH)	0.1046	0.0519	0.4425	0.2785
ONROAD SUBTOTAL	34.981	22.3708	68.8734	41.1904
AIRCRAFT	3.5897	3.6515	5.7568	8.5589
TRAINS	0.1363	0.1345	2.232	2.4508
OCEAN GOING VESSELS	0.6842	0.7626	13.2478	15.3709
COMMERCIAL HARBOR CRAFT	0.5949	0.5026	8.1762	5.1084
RECREATIONAL BOATS	15.7734	12.239	2.9597	2.5915
OFF-ROAD RECREATIONAL VEHICLES	0.9895	0.9607	0.0172	0.0208
OFF-ROAD EQUIPMENT	13.1627	12.0311	15.267	15.6073
FARM EQUIPMENT	0.5982	0.46	2.5451	2.1265
FUEL STORAGE AND HANDLING	2.246	1.7612	0	0
OFFROAD SUBTOTAL	37.7749	32.5032	50.2018	51.8351
PRE-BASELINE EMISSION REDUCTION CREDITS SUBTOTAL		0.75		0.61
TOTAL	138.6707	121.5841	125.2191	99.3952

Source: ARB CEPAM emissions inventory, Version 1.04.

Table A-2
Emission Inventory of Ozone Precursors in San Diego County
and South Coast Air Basin, Combined for 2012 and 2017
(tons per day)

SOURCE CATEGORY	VOC	VOC	NO _x	NO _x
	2012	2017	2012	2017
ELECTRIC UTILITIES	1.1638	0.9226	3.3235	6.6708
COGENERATION	0.1501	0.1467	0.7717	0.6952
OIL AND GAS PRODUCTION (COMBUSTION)	0.1121	0.1157	1.6307	1.8685
PETROLEUM REFINING (COMBUSTION)	1.0165	1.0165	8.3712	9.3072
MANUFACTURING AND INDUSTRIAL	4.0971	4.486	16.1068	16.017
FOOD AND AGRICULTURAL PROCESSING	0.058	0.0496	0.5916	0.4162
SERVICE AND COMMERCIAL	5.1873	4.9155	14.4725	12.2485
OTHER (FUEL COMBUSTION)	0.3939	0.351	5.1218	4.3857
SEWAGE TREATMENT	0.3716	0.4166	0.077	0.0765
LANDFILLS	10.3401	10.7411	0.8884	0.9546
INCINERATORS	0.0738	0.0835	1.7565	1.9694
SOIL REMEDIATION	0.0015	0.0016	0	0
OTHER (WASTE DISPOSAL)	6.2853	7.2016	0	0
LAUNDERING	0.2562	0.2747	0	0
DEGREASING	11.9893	13.9724	0	0
COATINGS AND RELATED PROCESS SOLVENTS	27.0348	30.4872	0.022	0.0162
PRINTING	5.9902	6.4101	0	0
ADHESIVES AND SEALANTS	6.0449	6.9173	0	0
OTHER (CLEANING AND SURFACE COATINGS)	0.8333	0.9653	0.0791	0.0273
OIL AND GAS PRODUCTION	2.3168	2.3974	0.017	0.0388
PETROLEUM REFINING	4.5588	4.5421	1.3119	1.4356
PETROLEUM MARKETING	31.4229	21.1382	0.0134	0.0135
OTHER (PETROLEUM PRODUCTION AND MARKETING)	0.0869	0.0988	0.001	0.0011
CHEMICAL	7.5608	8.9141	0.0059	0.007
FOOD AND AGRICULTURE	1.2633	1.3772	0	0.0001
MINERAL PROCESSES	0.9566	1.078	0.4818	0.6408
METAL PROCESSES	0.1517	0.1703	0.0564	0.0621
WOOD AND PAPER	0.2441	0.2675	0	0
GLASS AND RELATED PRODUCTS	0.0009	0.001	0	0
ELECTRONICS	0.0164	0.0222	0.0003	0.0004
OTHER (INDUSTRIAL PROCESSES)	3.778	4.3434	0.0531	0.0773
STATIONARY SUBTOTAL	133.757	133.8252	55.1536	56.9298
CONSUMER PRODUCTS	106.8149	107.265	0	0
ARCHITECTURAL COATINGS AND RELATED PROCESS SOLVENTS	25.3744	23.8723	0	0
PESTICIDES/FERTILIZERS	2.4933	2.3064	0	0
ASPHALT PAVING / ROOFING	2.7426	3.4735	0	0
RESIDENTIAL FUEL COMBUSTION	2.9193	2.758	16.4353	12.1799
FARMING OPERATIONS	4.3701	3.7583	0	0
CONSTRUCTION AND DEMOLITION	0	0	0	0
PAVED ROAD DUST	0	0	0	0
UNPAVED ROAD DUST	0	0	0	0
FUGITIVE WINDBLOWN DUST	0	0	0	0
FIRES	0.2825	0.2843	0.0936	0.0942
MANAGED BURNING AND DISPOSAL	0.4091	0.6852	0.13	0.2531
COOKING	3.8778	4.1344	0	0
OTHER (MISCELLANEOUS PROCESSES)	0	0	0	0
AREAWIDE SUBTOTAL	149.284	148.5374	16.6589	12.5272

Table A-2 (continued)
Emission Inventory of Ozone Precursors in San Diego County
and South Coast Air Basin, Combined for 2012 and 2017
(tons per day)

SOURCE CATEGORY	VOC	VOC	NOx	NOx
	2012	2017	2012	2017
LIGHT DUTY PASSENGER (LDA)	84.0923	47.9567	52.9367	30.3166
LIGHT DUTY TRUCKS - 1 (LDT1)	23.0015	13.1452	13.0469	6.6003
LIGHT DUTY TRUCKS - 2 (LDT2)	32.279	21.1218	32.8386	17.536
MEDIUM DUTY TRUCKS (MDV)	26.4659	21.1638	33.293	20.503
LIGHT HEAVY DUTY GAS TRUCKS - 1 (LHDV1)	7.0551	5.2575	9.2979	6.4418
LIGHT HEAVY DUTY GAS TRUCKS - 2 (LHDV2)	0.9581	0.6876	1.3935	1.0125
MEDIUM HEAVY DUTY GAS TRUCKS (MHDV)	2.0011	0.9232	3.0488	1.843
HEAVY HEAVY DUTY GAS TRUCKS (HHDV)	0.3956	0.1206	0.6622	0.4373
LIGHT HEAVY DUTY DIESEL TRUCKS - 1 (LHDV1)	0.6609	0.572	21.9367	15.3078
LIGHT HEAVY DUTY DIESEL TRUCKS - 2 (LHDV2)	0.2129	0.1846	6.9998	4.4612
MEDIUM HEAVY DUTY DIESEL TRUCKS (MHDV)	2.8023	1.4354	45.1474	28.9518
HEAVY HEAVY DUTY DIESEL TRUCKS (HHDV)	7.9382	2.3631	130.7385	81.2957
MOTORCYCLES (MCY)	13.2738	12.9971	2.8732	2.968
HEAVY DUTY DIESEL URBAN BUSES (UB)	1.4939	0.9503	22.815	13.8606
HEAVY DUTY GAS URBAN BUSES (UB)	0.5037	0.3608	0.7837	0.5993
SCHOOL BUSES - GAS (SBG)	0.1652	0.0564	0.159	0.0905
SCHOOL BUSES - DIESEL (SBD)	0.1987	0.0556	2.7608	2.6324
OTHER BUSES - GAS (OBG)	0.2563	0.1951	0.6893	0.4768
OTHER BUSES - MOTOR COACH - DIESEL (OBC)	0.1152	0.0418	1.8819	1.3187
ALL OTHER BUSES - DIESEL (OBD)	0.1331	0.0366	2.0096	1.3025
MOTOR HOMES (MH)	0.3592	0.1873	1.5459	1.0353
ONROAD SUBTOTAL	204.362	129.8125	386.8584	238.9911
AIRCRAFT	6.6479	7.3643	19.3094	23.1663
TRAINS	1.7259	1.6439	27.4811	31.5763
OCEAN GOING VESSELS	2.4345	2.8651	43.3892	44.7496
COMMERCIAL HARBOR CRAFT	1.7765	1.6065	24.4509	17.241
RECREATIONAL BOATS	59.214	45.9426	11.082	9.7037
OFF-ROAD RECREATIONAL VEHICLES	5.3875	5.3041	0.0699	0.0869
OFF-ROAD EQUIPMENT	74.8926	63.8109	91.125	79.1006
FARM EQUIPMENT	1.5848	1.1923	6.1556	5.1207
FUEL STORAGE AND HANDLING	13.9977	10.8208	0	0
OFFROAD SUBTOTAL	167.6614	140.5505	223.0631	210.7451
PRE-BASELINE EMISSION REDUCTION CREDITS SUBTOTAL		0.75		0.61
TOTAL	655.0644	553.4756	681.734	519.8032

Source: ARB CEPAM emissions inventory, Version 1.04.

ATTACHMENT B
PLANNED MILITARY PROJECTS SUBJECT TO GENERAL CONFORMITY

TABLE B-1
Projected Emissions and Preliminary Schedule for USMC and DoN Projects through 2035

Year	Annual Emissions Change, tons per day	
	NO _x	VOC
2011	0.00	0.01
2012	0.25	0.04
2013	0.19	0.06
2014	0.19	0.00
2015	0.77	0.24
2016	0.35	0.04
2017	0.32	0.04
2018	0.32	0.04
2019	0.32	0.04
2020	0.39	0.04
2021	0.12	0.01
2022	0.30	0.01
2023	0.30	0.01
2024	0.30	0.01
2025	0.59	0.50
2026	0.12	0.001
2027	0.12	0.001
2028	0.12	0.001
2029	0.12	0.001
2030	0.12	0.001
2031	0.12	0.001
2032	0.12	0.001
2033	0.12	0.001
2034	0.12	0.001
2035	0.12	0.001
Total	5.91	1.08

Source: Letter to the District from the Department of the Navy and U.S. Marine Corps. February 29, 2016.

ATTACHMENT C
ARB Control Measures, 1985 to 2015

Table C-1
ARB Control Measures, 1985 to 2015

ARB Board Action (Board)	Hearing Date
Amendments to the Portable Fuel Container Regulation Amendments to the Portable Fuel Container (PFC) regulation, which include requiring certification fuel to contain 10 percent ethanol, harmonizing aspects of the Board's PFC certification and test procedures with those of the EPA, revising the ARB's certification process, and streamlining, clarifying, and increasing the robustness of ARB's certification and test procedures.	2/18/16
Technical Status and Proposed Revisions to On-Board Diagnostic System Requirements and Associated Enforcement Provisions for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles and Engines (OBD II) Amendments to the OBD II regulations that update requirements to account for LEV III applications and monitoring requirements for gasoline and diesel vehicles, and clarify and improve the regulation; also, updates to the associated OBD II enforcement regulation to align it with the proposed amendments to the OBD II regulations and a minor amendment to the definition of "emissions-related part" in title 13, CCR Section 1900.	9/25/15
2015 Low Carbon Fuel Standard (LCFS) Amendments (2 of 2) Re-adoption of the Low Carbon Fuel Standard, which includes updates and revisions to the regulation now in effect. The proposed regulation was first presented to the Board at its February 2015 public hearing, at which the Board directed staff to make modifications to the proposal.	9/24/15
Proposed Regulation on the Commercialization of Alternative Diesel Fuels (2 of 2) Regulation governing the introduction of alternative diesel fuels into the California commercial market, including special provisions for biodiesel.	9/24/15
CA Cap on GHG Emissions and Market-Based Compliance Mechanisms (2 of 2) Amendments to the Cap and Trade Regulation to include a new Rice Cultivation Compliance Offset Protocol and an update to the United States Forest Compliance Offset Protocol that would include project eligibility in parts of Alaska.	6/25/15
Intermediate Volume Manufacturer Amendments to the Zero Emission Vehicle Regulation (2 of 2) Amendments regarding intermediate volume manufacturer compliance obligations under the Zero Emission Vehicle regulation.	5/21/15
2015 Amendments to Certification Procedures for Vapor Recovery Systems at Gasoline Dispensing Facilities— Aboveground Storage Tanks and Enhanced Conventional Nozzles Amendments would establish new performance standards and specifications for nozzles used at fleet facilities that exclusively refuel vehicles equipped with onboard vapor recovery systems, would provide regulatory relief for owners of certain existing aboveground storage tanks, and would ensure that mass-produced vapor recovery equipment matches the specifications of equipment evaluated during the ARB certification process.	4/23/15
Proposed Regulation for the Commercialization of Alternative Diesel Fuels (1 of 2) Regulation governing the introduction of alternative diesel fuels into the California commercial market, including special provisions for biodiesel. This is the first of two hearings on the item, and the Board will not take action to approve the proposed regulation.	2/19/15
Evaporative Emission Control Requirements for Spark-Ignition Marine Watercraft Regulation for controlling evaporative emissions from spark-ignition marine watercraft. The proposed regulation will harmonize, to the extent feasible, with similar federal requirements, while adding specific provisions needed to support California's air quality needs.	2/19/15
2015 Low Carbon Fuel Standard (LCFS) Amendments (1 of 2) Regulation for a Low Carbon Fuel Standard that includes re- adoption of the existing Low Carbon Fuel Standard with updates and revisions. This is the first of two hearings on the item, and the Board will not take action to approve the proposed regulation.	2/19/15

Board Action	Hearing Date
CA Cap on GHG Emissions and Market-Based Compliance Mechanisms to Add the Rice Cultivation Projects and Updated U.S. Forest Projects Protocols (1 of 2) Updates to the Cap and Trade Regulation to include a new Rice Cultivation Compliance Offset Protocol and an update to the United States Forest Compliance Offset Protocol that would include project eligibility in parts of Alaska.	12/18/14
2014 Amendments to ZEV Regulation Additional compliance flexibility to ZEV manufacturers working to bring advanced technologies to market.	10/23/14
LEV III Criteria Pollutant Requirements for Light- and Medium-Duty Vehicles the Hybrid Electric Vehicle Test Procedures, and the HD Otto-Cycle and HD Diesel Test Procedures Applies to the 2017 and subsequent model years.	10/23/14
Amendments to Mandatory Reporting Regulation for Greenhouse Gases Further align reporting methods with EPA methods and factors, and modify reporting requirements to fully support implementation of California's Cap and Trade program.	9/19/14
Amendments to the California Cap on Greenhouse Gas Emissions and Market Based Compliance Mechanisms Technical revisions to Mandatory Reporting of Greenhouse Gas Emissions Regulation to further align reporting methods with EPA update methods and factors, and modify reporting requirements to fully support implementation of California's Cap and Trade program.	9/18/14
Amendments to the AB 32 Cost of Implementation Fee Regulation Amendments to the regulation to make it consistent with the revised mandatory reporting regulation, to add potential reporting requirements, and to incorporate requirements in the mandatory reporting regulation to streamline reporting.	9/18/14
Low Carbon Fuel Standard 2014 Update As a result of a California Court of Appeal decision, ARB will revisit the LCFS rulemaking process to meet certain procedural requirements of the APA and California Environmental Quality Act. Following incorporation of any modifications to the regulation, the Board will consider the proposed regulation for adoption at a second hearing held in the spring of 2015.	7/24/14
Revisions to the Carl Moyer Memorial Air Quality Standards Attainment Program Guidelines for On-Road Heavy-Duty Trucks Revisions to 1) reduce surplus emission reduction period, 2) reduce minimum CA usage requirement, 3) prioritize on-road funding to small fleets, 4) include light HD vehicles 14000-19500 lbs, and 5) clarify program specifications.	7/24/14
Amendments to Enhanced Fleet Modernization (Car Scrap) Program Amendments consistent with SB 459 which requires ARB to increase benefits for low-income California residents, promote cleaner replacement vehicles, and enhance emissions reductions.	6/26/14
Proposed Approval of Amendments to CA Cap on GHG Emissions and Market-Based Compliance Mechanisms Second hearing of two, continued from October 2013.	4/24/14
Truck and Bus Rule Update Amendments to the Regulation to Reduce Emissions of Diesel Particulate Matter, NOx, and Other Criteria Pollutants From In-Use On-Road Diesel-Fueled Vehicles: increasing low-use vehicle thresholds, allowing owners to newly opt-in to existing flexibility provisions, adjusting "NOx exempt" vehicle provisions, and granting additional time for fleets in certain areas to meet PM filter requirements.	4/24/14
Heavy-Duty GHG Phase I: On-Road Heavy-Duty GHG Emissions Rule, Tractor-Trailer Rule, Commercial Motor Vehicle Idling Rule, Optional Reduced Emission Standards, Heavy-Duty Hybrid-Electric Vehicles Certification Procedure New GHG standards for MD and HD engines and vehicles identical to those adopted by the EPA in 2011 for MYs 2014-18.	12/12/13
Agricultural equipment SIP credit rule Incentive-funded projects must be implemented using Carl Moyer Program Guidelines; must be surplus, quantifiable, enforceable, and permanent, and result in emission reductions that are eligible for SIP credit.	10/25/13
Mandatory Report of Greenhouse Gas Emissions Approved a regulation that establishes detailed specifications for emissions calculations, reporting, and verification of GHG emission estimates from significant sources.	10/25/13

Board Action	Hearing Date
CA Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms Technical revisions to the Mandatory Reporting of Greenhouse Gas Emissions Regulation to further align reporting methods with EPA, update factors, and modify definitions to maintain consistency with the Cap and Trade program.	10/25/13
Zero emission vehicle test procedures Existing certification test procedures for plug-in hybrid vehicles need to be updated to reflect technology developments. The ZEV regulation will require minor modifications to address clarity and implementation issues.	10/24/13
Consumer Products: Antiperspirants, Deodorants, Test Method 310, Aerosol Coatings, Proposed Repeal of Hairspray Credit) Amendments to require various consumer products to reformulate to reduce VOC or reactivity content to meet specified limits, and to clarify various regulatory provisions, improve enforcement, and add analytical procedures.	9/26/13
Alternative fuel certification procedures Amendments to current alternative fuel conversion certification procedures for motor vehicles and engines that will allow small volume conversion manufacturers to reduce the upfront demonstration requirements and allow systems to be sold sooner with lower certification costs than with the current process, beginning with MY 2018.	9/26/13
Vapor Recovery for Gasoline Dispensing Facilities Amendments to certification and test procedures for vapor recovery equipment used on cargo tanks and at gasoline dispensing facilities.	7/25/13
Off-highway recreational vehicle evaporative emission control Staff proposes to set evaporative emission standards to control hydrocarbon emissions from Off-Highway Recreational Vehicles. The running loss, hot soak, and diurnal performance standards can be met by using proven automobile type control technology.	7/25/13
Gasoline and diesel fuel test standards Adopted amendments to add test standards for the measurement of prohibited oxygenates at trace levels specified in existing regulations.	1/25/13
LEV III and ZEV Programs for Federal Compliance Option Adopted amendments to deem compliance with national GHG new vehicle standards in 2017-2025 as compliance with California GHG standards for the same model years.	11/15/12 12/6/12 EO
Consumer products (automotive windshield washing fluid) Adopted amendments to add portions of 14 California counties to the list of areas with freezing temperatures where 25% VOC content windshield washing fluid could be sold.	10/18/2012 EO 03/15/13
GHG mandatory reporting, Fee Regulation, and Cap and Trade 2012 Adopted amendments to eliminate emission verification for facilities emitting less than 25,000 MTCO ₂ e and make minor changes in definitions and requirements.	9/20/12 11/2/12 EO
Amendments to Verification Procedure, Warranty and In-Use Compliance Requirements for In-Use Strategies to Control Emissions from Diesel Engines Approved amendments to the verification procedure used to evaluate diesel retrofits through emissions, durability, and field testing. Amendments will lower costs associated with required in-use compliance testing, streamline the in-use compliance process, and will extend time allowed to complete verifications.	8/23/2012 EO 07/02/13
Amendments to On-Board Diagnostics (OBD I and II) Regulations Approved amendments to the light- and medium-duty vehicle and heavy-duty engine OBD regulations.	8/23/2012 EO 06/26/13
Cap and Trade: Amendments to CA Cap on GHG Emissions and Market-Based Compliance Mechanisms, and Amendments Allowing Use of Compliance Instruments Issued by Linked Jurisdictions Amends Cap-and-Trade and compliance mechanisms to add security to the market system and to aid staff in implementation. Amendments include first auction rules, offset registry, market monitoring provisions, and information gathering necessary for the financial services operator.	6/28/12 7/31/12 EO
Vapor recovery defect list Adopted amendments to add defects and verification procedures for equipment approved since 2004, and make minor changes to provide clarity	6/11/12 EO

Board Action	Hearing Date
Tractor-Trailer GHG Regulation: Emergency Amendment Adopted emergency amendment to correct a drafting error and delay the registration date for participation in the phased compliance option	2/29/2012 2/29/12 EO
Advanced Clean Cars (ACC) Regulation: Low-Emission Vehicles and GHG Adopted more stringent criteria emission standards for MY 2015-2025 light and medium duty vehicles (LEV III), amended GHG emission standards for model year 2017-2025 light and medium duty vehicles (LEV GHG), amended ZEV Regulation to ensure the successful market penetration of ZEVs in commercial volumes, amended hydrogen fueling infrastructure mandate of the Clean Fuels Outlet regulation, and amended cert fuel for light duty vehicles from an MTBE-containing fuel to an E10 certification fuel.	1/26/12
Zero Emission Vehicle (ZEV) Adopted amendments to increase compliance flexibility, add two new vehicle categories for use in creating credits, increase credits for 300 mile FCVs, increase requirements for ZEVs and TZEVs, eliminate credit for PZEVs and AT PZEVs, expand applicability to smaller manufacturers, base ZEV credits on range, and make other minor changes in credit requirements	1/26/12
Amendments to Low Carbon Fuel Standard Regulation The amendments address several aspects of the regulation, including: reporting requirements, credit trading, regulated parties, opt-in and opt-out provisions, definitions, and other clarifying language.	12/16/11 10/10/12 EO
Amendments to Small Off-Road Engine and Tier 4 Off-Road Compression-Ignition Engine Regulations And Test Procedures; also "Recreational Marine" Spark-Ignition Marine Engine Amendments (Recreational Boats) adopted. Aligns California test procedures with EPA test procedures and requires off-road CI engine manufacturers to conduct in-use testing of their entire product lines to confirm compliance with previously established Not-To-Exceed emission thresholds.	12/16/2011 10/25/12 EO
Regulations and Certification Procedures for Engine Packages used in Light-Duty Specially Constructed Vehicles (Kit Cars) Ensures that certified engine packages, when placed into any Kit Car, would meet new vehicle emission standards, and be able to meet Smog Check requirements.	11/17/11 9/21/12 EO
Amendments to the California Reformulated Gasoline Regulations Corrects drafting errors in the predictive model, deletes outdated regulatory provisions, updates the notification requirements, and changes the restrictions on blending CARBOB with other liquids.	10/21/11 8/24/12 EO
Amendments to the In-Use Diesel Transport Refrigeration Units (TRU) ATCM Mechanisms to improve compliance rates and enforceability.	10/21/11 8/31/12 EO
Amendments to the AB 32 Cost of Implementation Fee Regulation Clarifies requirements and regulatory language, revises definitions.	10/20/11 8/21/12 EO
Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms Regulation, Including Compliance Offset Protocols Greenhouse Gas Emissions Cap-and-Trade Program, including compliance offset protocols and multiple pathways for compliance.	10/21/11 8/21/12 EO
Amendments to the Regulation for Cargo Handling Equipment (CHE) at Ports and Intermodal Rail Yards (Port Yard Trucks Regulation) Provides additional compliance flexibility, and maintains anticipated emissions reductions. As applicable to yard trucks and two-engine sweepers.	9/22/11 8/2/12 EO
Amendments to the Enhanced Vapor Recovery Regulation for Gasoline Dispensing Facilities New requirement for low permeation hoses at gasoline dispensing facilities.	9/22/11 7/26/12 EO
Amendments to Cleaner Main Ship Engines and Fuel for Ocean-Going Vessels Adjusts the offshore regulatory boundary. Aligns very low sulfur fuel implementation deadlines with new federal requirements.	6/23/11 9/13/12 EO
Particulate Matter Emissions Measurement Allowance For Heavy-Duty Diesel In-Use Compliance Regulation Emission measurement allowances provide for variability associated with the field testing required in the regulation.	6/23/11
Low Carbon Fuel Standard Carbon Intensity Lookup Table Amendments Adds new pathways for vegetation-based fuels	2/24/11
Amendments to Cleaner In-Use Heavy-Duty On-Road Diesel Trucks and LSI Fleets Regulations Amends five regulations to provide relief to fleets adversely affected by the economy, and take into account the fact that emissions are lower than previously predicted.	12/16/10 9/19/11 EO

Board Action	Hearing Date
Tractor-Trailer GHG Regulation Amendment Enacts administrative changes to increase compliance flexibility and reduce costs	12/16/10
Amendments to Cleaner In-Use Off-Road Diesel-Fueled Fleets Regulation Amendments provide relief to fleets adversely affected by the economy, and take into account the fact that emissions are lower than previously predicted.	12/16/10 10/28/11 EO
In-Use On-Road Diesel-Fueled Heavy-Duty Drayage Trucks at Ports and Rail Yard Facilities Amendments add flexibility to fleets' compliance schedules, mitigate the use of noncompliant trucks outside port and rail properties, and provide transition to the Truck and Bus regulation.	12/16/10 9/19/11 EO
Amendments to the Regulation for Mandatory Reporting of Greenhouse Gas Emissions Changes requirements to align with federal greenhouse gas reporting requirements adopted by EPA.	12/16/10 10/28/11 EO
Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms Regulation Establishes framework and requirements for Greenhouse Gas Emissions Cap-and-Trade Program, including compliance offset protocols.	12/16/10 10/26/11 EO
Amendments to the Consumer Products Regulation Amendments set new or lower VOC limits for some categories, prohibit certain toxic air contaminants, high GWP compounds, and surfactants toxic to aquatic species. Also changes Method 310, used to determine aromatic content of certain products.	11/18/10 9/29/11 EO
Amendment of the ATCM for Diesel Transportation Refrigeration Units (TRU) Amendments expand the compliance options and clarify the operational life of various types of TRUs.	11/18/10 2/2/11 EO
Amendments to the ATCM for Stationary Compression Ignition Engines Approved amendments to closely align the emission limits for new emergency standby engines in the ATCM with the emission standards required by the federal Standards of Performance.	10/21/10 3/25/11 EO
Diesel Vehicle Periodic Smoke Inspection Program Adopted amendments to exempt medium duty diesel vehicles from smoke inspection requirements if complying with Smog Check requirements.	10/21/10 8/23/11 EO
Renewable Electricity Standard Regulation Approved a regulation that will require electricity providers to obtain at least 33% of their retail electricity sales from renewable energy resources by 2020.	9/23/10
Energy Efficiency at Industrial Facilities Adopted standards for the reporting of GHG emissions and the feasibility of emissions controls by the largest GHG-emitting stationary sources.	7/22/10 5/9/11 EO
Amendments to Commercial Harbor Craft Regulation Approved amendments to require the use of cleaner engines in diesel-fueled crew and supply, barge, and dredge vessels.	6/24/10 4/11/11 EO
Accelerated Introduction of Cleaner Line-Haul Locomotives Agreement with railroads sets prescribed reductions in diesel risk and target years through 2020 at four major railyards.	6/24/10
Amendments to New Passenger Motor Vehicle Greenhouse Gas Emission Standards Approved amendments deeming compliance with EPA's GHG standards as compliance with California's standards in 2012 through 2016 model years.	2/25/2010 03/29/10
Sulfur Hexafluoride (SF6) Regulation Regulation to reduce emissions of sulfur hexafluoride (SF6), a high-GWP GHG, from high-voltage gas-insulated electrical switchgear.	2/25/10 12/15/10 EO
Amendments to the Statewide Portable Equipment Registration Regulation and Portable Engine ATCM Approved amendments that extend the deadline for removal of certain uncertified portable engines for one year.	1/28/10 8/27/10 EO 12/8/10 EO
Diesel Engine Retrofit Control Verification, Warranty, and Compliance Regulation Amendments Approved amendments to require per-installation compatibility assessment, performance data collection, and reporting of additional information, and enhance enforceability.	1/28/10 12/6/10 EO
Stationary Equipment High-GWP Refrigerant Regulation Approved a regulation to reduce emissions of high-GWP refrigerants from stationary non-residential equipment.	12/1/09 9/14/10 EO
Amendments to Limit Ozone Emissions from Indoor Air Cleaning Devices Adopted amendments to delay the labeling compliance deadlines by one to two years and to make minor changes in testing protocols.	12/9/09

Board Action	Hearing Date
Emission Warranty Information Reporting Regulation Amendments Repealed the 2007 regulation and readopted the 1988 regulation with amendments to implement adverse court decision.	11/19/09 9/27/10 EO
Amendments to Maximum Incremental Reactivity Tables Added many new compounds and modified reactivity values for many existing compounds in the tables to reflect new research data.	11/3/09 7/23/10 EO
AB 32 Cost of Implementation Fee Regulation AB 32 authorizes ARB to adopt by regulation a schedule of fees to be paid by sources of greenhouse gas emissions regulated pursuant to AB 32. ARB staff will propose a fee regulation to support the administrative costs of AB 32 implementation.	9/24/2009 05/06/10 EO
Passenger Motor Vehicle Greenhouse Gas Limits Amendments Approved amendments granting credits to manufacturers for compliant vehicles sold in other states that have adopted California regulations.	9/24/09 2/22/10 EO
Consumer Products Amendments Approved amendments that set new VOC limits for multi-purpose solvent and paint thinner products and lower the existing VOC limit for double phase aerosol air fresheners.	9/24/09 8/6/10 EO
Amendments to In-Use Off-Road Diesel-Fueled Fleets Regulation Approved amendments to implement legislatively directed changes and provide additional incentives for early action.	7/23/09 12/2/09 EO 6/3/10 EO
Methane Emissions from Municipal Solid Waste Landfills Approved a regulation to require smaller and other uncontrolled landfills to install gas collection and control systems, and also requires existing and newly installed systems to operate optimally.	6/25/09 5/5/10 EO
Cool Car Standards Approved a regulation requiring the use of solar management window glass in vehicles up to 10,000 lb GVWR.	6/25/09
Enhanced Fleet Modernization (Car Scrap) Approved guidelines for a program to scrap up to 15,000 light duty vehicles statewide.	6/25/09 7/30/10 EO
Amendments to Heavy-Duty On-Board Diagnostics Regulations Approved amendments to the light and medium-duty vehicle and heavy duty engine OBD regulations.	5/28/2009 4/6/10 EO
Smog Check Improvements BAR adopted amendments to implement changes in state law and SIP commitments adopted by ARB between 1996 and 2007.	5/7/09 by BAR 6/9/09 EO
AB 118 Air Quality Improvement Program Guidelines The Air Quality Improvement Program provides for up to \$50 million per year for seven years beginning in 2009-10 for vehicle and equipment projects that reduce criteria pollutants, air quality research, and advanced technology workforce training. The AQIP Guidelines describe minimum administrative, reporting, and oversight requirements for the program, and provide general criteria for how the program shall be implemented.	04/23/09 08/28/09 EO
Pesticide Element Reduce VOC emissions from the application of agricultural field fumigants in the South Coast, Southeast Desert, Ventura County, San Joaquin Valley, and Sacramento Metro federal ozone nonattainment areas.	4/20/09 10/12/09 EO (2) 8/2/11 EO
Low Carbon Fuel Standard Approved new standards to lower the carbon content of fuels.	4/20/09 11/25/09 EO
Pesticide Element for San Joaquin Valley DPR Director approved pesticide ROG emission limit of 18.1 tpd and committed to implement restrictions on non-fumigant pesticide use by 2014 in the San Joaquin Valley.	4/7/09 DPR
Tire Pressure Inflation Regulation Approved a regulation requiring automotive service providers to perform tire pressure checks as part of every service.	3/26/09 2/4/10 EO
Sulfur Hexafluoride from Non-Utility and Non-Semiconductor Applications Approved a regulation to phase out use of Sulfur Hexafluoride over the next several years.	2/26/09 11/12/09 EO
Semiconductor Operations Approved a regulation to set standards to reduce fluorinated gas emissions from the semiconductor and related devices industry.	2/26/09 10/23/09 EO
Plug-In Hybrid Electric Vehicles Test Procedure Amendments Amends test procedures to address plug-in-hybrid electric vehicles.	1/23/09 12/2/09 EO

Board Action	Hearing Date
In-Use Off-Road Diesel-Fueled Fleets Amendments Makes administrative changes to recognize delays in the supply of retrofit control devices.	1/22/09
Small Containers of Automotive Refrigerant Approved a regulation to reduce leakage from small containers, adopt a container deposit and return program, and require additional container labeling and consumer education requirements.	1/22/09 1/5/10 EO
Aftermarket Critical Emission Parts on Highway Motorcycles Allows for the sale of certified critical emission parts by aftermarket manufacturers.	1/22/09 6/19/09 EO
Heavy-Duty Tractor-Trailer Greenhouse Gas (GHG) Reduction Approved a regulation to reduce greenhouse gas emissions by improving long haul tractor and trailer efficiency through use of aerodynamic fairings and low rolling resistance tires.	12/11/08 10/23/09 EO
Cleaner In-Use Heavy-Duty Diesel Trucks (Truck and Bus Regulation) Approved a regulation to reduce diesel particulate matter and NOx through fleet modernization and exhaust retrofits. Makes enforceability changes to public fleet, off-road equipment, and portable equipment regulations.	12/11/08 10/19/09 EO 10/23/09 EO
Large Spark-Ignition Engine Amendments Approved amendments to reduce evaporative, permeation, and exhaust emissions from large spark-ignition (LSI) engines equal to or below 1 liter in displacement.	11/1/08 3/12/09 EO
Small Off-Road Engine (SORE) Amendments Approved amendments to address the excessive accumulation of emission credits.	11/21/08 2/24/10 EO
Proposed AB 118 Air Quality Guidelines for the Air Quality Improvement Program and the Alternative and Renewable Fuel and Vehicle and Technology Program. The California Alternative and Renewable Fuel, Vehicle Technology, Clean Air, and Carbon Reduction Act of 2007 (AB 118) requires ARB to develop guidelines for both the Alternative and Renewable Fuel and Vehicle Technology Program and the Air Quality Improvement Program to ensure that both programs do not adversely impact air quality.	09/25/08 EO 05/20/09
Portable Outboard Marine Tanks and Components (part of Additional Evaporative Emission Standards) Approved a regulation that establishes permeation and emission standards for new portable outboard marine tanks and components.	9/25/08 7/20/09 EO
Cleaner Fuel in Ocean Going Vessels Approved a regulation that requires use of low sulfur fuel in ocean-going ship main engines, and auxiliary engines and boilers.	7/24/08 4/16/09 EO
Spark-Ignition Marine Engine and Boat Amendments Provides optional compliance path for > 500 hp sterndrive/inboard marine engines.	7/24/08 6/5/09 EO
Consumer Products Amendments Approved amendments that add VOC limits for seven additional categories and lower limits for twelve previously regulated categories.	6/26/08 5/5/09 EO
Zero emission vehicles Updated California's ZEV requirements to provide greater flexibility with respect to fuels, technologies, and simplifying compliance pathways. Amendments give manufacturers increased flexibility to comply with ZEV requirements by giving credit to plug-in hybrid electric vehicles and establishing additional ZEV categories in recognition of new developments in fuel cell vehicles and battery electric vehicles.	3/27/08 12/17/08 EO
Amendments to the Verification Procedure, Warranty, and In-Use Compliance Requirements for In-Use Strategies to Control Emissions from Diesel Engines Adds verification requirements for control technologies that only reduce NOx emissions, new reduction classifications for NOx reducing technologies, new testing requirements, and conditional extensions for verified technologies.	1/24/08 12/4/08 EO
Mandatory Report of Greenhouse Gas Emissions Approved a regulation that establishes detailed specifications for emissions calculations, reporting, and verification of GHG emission estimates from significant sources.	12/6/07 10/12/08 EO
Gaseous Pollutant Measurement Allowances for In-Use Heavy-Duty Diesel Compliance Measurement accuracy margins are to be determined through an ongoing comprehensive testing program performed by an independent contractor. Amendments include these measurement accuracy margins into the regulation.	12/6/07 10/14/08 EO

Board Action	Hearing Date
Ocean-Going Vessels While at Berth (aka Ship Hoteling) - Auxiliary Engine Cold Ironing and Clean Technology Approved a regulation that reduces emissions from auxiliary engines on ocean-going ships while at-berth.	12/6/07 10/16/08 EO
In-Use On-Road Diesel-Fueled Heavy-Duty Drayage Trucks at Ports and Rail Yard Facilities Approved a regulation that establishes emission standards for in-use, heavy-duty diesel-fueled vehicles that transport cargo to and from California's ports and intermodal rail facilities.	12/6/07 10/12/08 EO
Commercial Harbor Craft Approved a regulation that establishes in-use and new engine emission limits for both auxiliary and propulsion diesel engines on ferries, excursion vessels, tugboats, and towboats.	11/15/07 9/2/08 EO
Suggested Control Measure for Architectural Coatings Amendments Approved amendments to reduce the recommended VOC content of 19 categories of architectural coatings.	10/26/07
Aftermarket Catalytic Converter Requirements Approved amendments that establish more stringent emission performance and durability requirements for used and new aftermarket catalytic converters offered for sale in California.	10/25/07 2/21/08 NOD
Limiting Ozone Emissions from Indoor Air Cleaning Devices Approved ozone emission limit of 0.050 ppm for portable indoor air cleaning devices in response to requirements of AB 2276 (2006).	9/27/07 8/7/08 EO
Pesticide Commitment for Ventura County in 1994 SIP Approved substitution of excess ROG emission reductions from state motor vehicle program for 1994 SIP reduction commitment from pesticide application in Ventura County.	9/27/07 11/30/07 EO
In-Use Off-Road Diesel Equipment Approved a regulation that requires off-road diesel fleet owners to modernize their fleets and install exhaust retrofits.	7/26/07 4/4/08 EO
Emission Control and Environmental Performance Label Regulations Approved amendments to add a Global Index Label and modify the format of the Smog Index Label on new cars.	6/21/07 5/2/08 EO
Vapor Recovery from Aboveground Storage Tanks Approved a regulation to establish new performance standards and specifications for the vapor recovery systems and components used with aboveground storage tanks.	6/21/07 5/2/08 EO
CaRFG Phase 3 amendments Approved amendments to mitigate the increases in evaporative emissions from on-road motor vehicles resulting from the addition of ethanol to gasoline.	6/14/07 4/25/08 EO 8/7/08 EO
Formaldehyde from Composite Wood Products Approved an ATCM to limit formaldehyde emissions from hardwood plywood, particleboard, and medium density fiberboard to the maximum amount feasible.	4/26/07 3/5/08 EO
Portable equipment registration program (PERP) and airborne toxic control measure for diesel-fueled portable engines Approved amendments to allow permitting of Tier 0 portable equipment engines used in emergency or low use duty and to extend permitting of certain Tier 1 and 2 "resident" engines to 1/1/10.	3/22/07 7/31/07 EO
Perchloroethylene Control Measure Amendments Approved amendments to the Perchloroethylene ATCM to prohibit new Perc dry cleaning machines beginning 2008 and phase out all Perc machines by 2023.	1/25/07 11/7/07 EO
Amendments to Emission Warranty Information Reporting & Recall Regulations Approved amendments that tighten the provisions for recalling vehicles for emissions-related failures, helping ensure that corrective action is taken to vehicles with defective emission control devices or systems.	12/7/06 3/22/07 10/17/07 EO
Voluntary accelerated vehicle retirement regulations Approved amendments that authorize the use of remote sensing to identify light-duty high emitters and that establish protocols for quantifying emissions reductions from high emitters proposed for retirement.	12/7/06
Emergency regulation for portable equipment registration program (PERP), airborne toxic control measures for portable and stationary diesel-fueled engines	12/7/06
Amendments to the Hexavalent Chromium ATCM Approved amendments that require use of best available control technology on all chrome plating and anodizing facilities.	12/7/06
Consumer Products Regulation Amendments Approved amendments that set lower emission limits in 15 product categories.	11/17/06 9/25/07 EO

Board Action	Hearing Date
Requirements for Stationary Diesel In-Use Agricultural Engines Approved amendments to the stationary diesel engine ATCM which set emissions standards for in-use diesel agricultural engines.	11/16/06 7/3/07 NOD
Ships - Onboard Incineration Approved amendments to cruise ship incineration ATCM to include all oceangoing ships of 300 gross registered tons or more.	11/16/06 9/11/07 EO
Zero Emission Bus Approved amendments postponing the 15 percent purchase requirement three years for transit agencies in the diesel path and one to two years for transit agencies in the alternative fuel path, in order to keep pace with developments in zero emission bus technology, and adding an Advanced Demonstration requirement to offset emission losses.	10/19/06 8/27/07 EO
Distributed generation certification Approved amendments improving the emissions durability and testing requirements, adding waste gas emission standards, and eliminating a redundant PM standard in the current 2007 emission standards.	10/19/06 5/17/07 NOD
Heavy-Duty Diesel In-Use Compliance Regulation Approved amendments to the heavy-duty diesel engine regulations and test procedures to create a new in-use compliance program conducted by engine manufacturers. The amendments would help ensure compliance with applicable certification standards throughout an engine's useful life.	9/28/06 7/19/07 NOD
Revisions to OBD II and the Emission Warranty Regulations Approved amendments to the OBD II regulation to provide for improved emission control monitoring including air-fuel cylinder imbalance monitoring, oxygen sensor monitoring, catalyst monitoring, permanent fault codes for gasoline vehicles and new thresholds for diesel vehicles.	9/28/06 8/9/07 EO
Off-Highway Recreational Vehicle Amendments Approved amendments to the Off-Highway Recreational Vehicle Regulations including harmonizing evaporative emission standards with federal regulations, expanding the definition of ATVs, modifying labeling requirements, and adjusting riding seasons.	7/20/06 6/1/07 EO
Portable Equipment Registration Program (PERP) Amendments Approved amendments to the Statewide Portable Equipment Registration program that include installation of hour meters on equipment, and revisions to recordkeeping, reporting, and fees.	6/22/06 11/13/06 NOD
Heavy Duty Vehicle Service Information Approved amendments to the Service Information Rule to require manufacturers to make available diagnostic equipment and information for sale to the aftermarket.	6/22/06 5/3/07 EO
LEV II technical amendments Approved amendments to evaporative emission test procedures, four-wheel drive dynamometer provisions, and vehicle label requirements.	6/22/06 9/27/06 NOD
Dry Cleaning ATCM Amendments Approved amendments to the Dry Cleaning ATCM to limit siting of new dry cleaners, phase out use of Perc at co-residential facilities, phase out higher emitting Perc sources at other facilities, and require enhanced ventilation at existing and new Perc facilities.	5/25/06
Forklifts and other Large Spark Ignition (LSI) Equipment Adopted a regulation to reduce emissions from forklifts and other off-road spark-ignition equipment by establishing more stringent standards for new equipment, and requiring retrofits or engine replacement on existing equipment. Adopts EPA's standards for 2007; adopts more stringent standards for 2010.	5/25/06 3/2/07 EO
Enhanced Vapor Recovery Amendments Approved amendments to the vapor recovery system regulation and adopted revised test procedures.	5/25/06
Diesel Retrofit Technology Verification Procedure Approved amendments to the Diesel Emission In-use Control Strategy Verification Procedure to substitute a 30% increase limit in NOx concentration for an 80% reduction requirement from PM retrofit devices.	3/23/06 12/21/06 NOD
Heavy duty vehicle smoke inspection program amendments Approved amendments to impose a fine on trucks not displaying a current compliance certification sticker.	1/26/06 12/4/06 EO
Ocean-going Ship Auxiliary Engine Fuel Approved a regulation to require ships to use cleaner marine gas oil or diesel to power auxiliary engines within 24 nautical miles of the California coast.	12/8/05 10/20/06 EO

Board Action	Hearing Date
Diesel Cargo Handling Equipment Approved a regulation to require new and in-use cargo handling equipment at ports and intermodal rail yards to reduce emissions by utilizing best available control technology.	12/8/05 6/2/06 EO
Public and Utility Diesel Truck Fleets Approved a regulation to reduce diesel particulate matter emissions from heavy duty diesel trucks in government and private utility fleets.	12/8/05 10/4/06 EO
Cruise ships – Onboard Incineration Adopted an Air Toxic Control Measure to prohibit cruise ships from conducting onboard incineration within three nautical miles of the California coast.	11/17/05 2/1/06 NOD
Inboard Marine Engine Rule Amendments Approved amendments to the 2001 regulation to include additional compliance options for manufacturers.	11/17/05 9/26/06 EO
Heavy-Duty Diesel Truck Idling Technology Approved a regulation to limit sleeper truck idling to 5 minutes. Allows alternate technologies to provide cab heating/cooling and power.	10/20/05 9/1/06 EO
Automotive Coating Suggested Control Measure Approved an SCM for automotive coatings for adoption by air districts. The measure will reduce the VOC content of 11 categories of surface protective coatings.	10/20/05
2007-09 Model-year heavy duty urban bus engines and the fleet rule for transit agencies Adopted amendments to align urban bus emission limits with on-road heavy duty truck emission limits and allow for the purchase of non-complying buses under the condition that bus turnover increase to offset NOx increases.	10/20/05 10/27/05 7/28/06 EO
Portable fuel containers (part 2 of 2) Approved amendments to revise spout and automatic shutoff design.	9/15/05 7/28/06 EO
Portable Fuel Containers (part 1 of 2) Approved amendments to include kerosene containers in the definition of portable fuel containers.	9/15/05 11/9/05 NOD
2007-09 Model-year heavy duty urban bus engines and the fleet rule for transit agencies Adopted amendments to require all transit agencies in SCAQMD to purchase only alternate fuel versions of new buses.	9/15/05 Superseded by 10/20/05
Reid vapor pressure limit emergency rule Approved amendments to relax Reid vapor pressure limit to accelerate fuel production for Hurricane Katrina victims.	9/8/05 Operative for September and October 2005 only
Heavy-Duty Truck OBD Approved a regulation to require on-board diagnostic (OBD) systems for new gas and diesel trucks, similar to the systems on passenger cars.	7/21/05 12/28/05 EO
Definition of Large Confined Animal Facility Adopted a regulation to define the size of a large CAF for the purposes of air quality permitting and reduction of ROG emissions to the extent feasible.	6/23/05 4/13/06 EO
ATCM for stationary compression ignition engines Approved emergency amendments (3/17/05) and permanent amendments (5/26/05) to relax the diesel PM emission limits on new stationary diesel engines to current off-road engine standards to respond to the lack of availability of engines meeting the original ATCM standard.	3/17/05 5/26/05 7/29/05 EO
Transit Fleet Rule Approved amendments to add emission limits for non-urban bus transit agency vehicles, require lower bus and truck fleet-average NOx and PM emission limits, and clarify emission limits for CO, NMHC, and formaldehyde.	2/24/05 10/19/05 NOD
Thermal Spraying ATCM Approved a regulation to reduce emissions of hexavalent chromium and nickel from thermal spraying operations.	12/9/04 7/20/05 EO
Tier 4 Standards for Small Off-Road Diesel Engines (SORE) Approved new emission standards for off-road diesel engines to be phased in between 2008 and 2015.	12/9/04 10/21/05 EO
Emergency Regulatory Amendment Delaying the January 1, 2005 Implementation Date for the Diesel Fuel Lubricity Standard Adopted an emergency regulation delaying the lubricity standard compliance deadline by five months to respond to fuel pipeline contamination problems.	11/24/04 12/10/04 EO

Board Action	Hearing Date
Enhanced vapor recovery compliance extension Approved amendments to the EVR regulation to extend the compliance date for onboard refueling vapor recovery compatibility to the date of EVR compliance.	11/18/04 2/11/05 EO
CaRFG Phase 3 amendments Approved amendments correcting errors and streamlining requirements for compliance and enforcement of CaRFG Phase 3 regulations adopted in 1999.	11/18/04
Clean diesel fuel for harbor craft and intrastate locomotives Approved a regulation that required harbor craft and locomotives operating solely within California to use clean diesel fuel.	11/18/04 3/16/05 EO
Non-vehicular Source, Consumer Product, and Architectural Coating Fee Regulation Amendment Approved amendments to fee regulations to collect supplemental fees when authorized by the Legislature.	11/18/04
Greenhouse gas limits for motor vehicles Approved a regulation that sets the first ever greenhouse gas emission standards on light and medium duty vehicles starting with the 2009 model year.	9/24/04 8/4/05 EO
Gasoline vapor recovery system equipment defects list Approved the addition of defects to the VRED list for use by compliance inspectors.	8/24/04 6/22/05 EO
Unihose gasoline vapor recovery systems Approved an emergency regulation and an amendment to delay the compliance date for unihose installation to the date of dispenser replacement.	7/22/04 11/24/04 EO
General Idling Limits for Diesel Trucks Approved a regulation that limits idling of heavy-duty diesel trucks operating in California to five minutes, with exceptions for sleeper cabs.	7/22/04
Consumer Products Approved a regulation to reduce ROG emissions from 15 consumer products categories, prohibit the use of 3 toxic compounds in consumer products, ban the use of PDCB in certain products, allow for the use of Alternative Control Plans, and revise Test Method 310.	6/24/04 5/6/05 EO
Urban bus engines/fleet rule for transit agencies Approved amendments to allow for the purchase of hybrid diesel buses and revise the zero emission bus demonstration and purchase timelines.	6/24/04
Engine Manufacturer Diagnostics Approved a regulation that would require model year 2007 and later heavy duty truck engines to be equipped with engine diagnostic systems to detect malfunctions of the emission control system.	5/20/04
Chip Reflash Approved a voluntary program and a backstop regulation to reduce heavy duty truck NOx emissions through the installation of new software in the engine's electronic control module.	3/25/04 3/21/05 EO
Portable equipment registration program (PERP) Approved amendments to allow uncertified engines to be registered until December 31, 2005, to increase fees, and to modify administrative requirements.	2/26/04 1/7/05 EO 6/21/05 EO
Portable Diesel Engine ATCM Adopted a regulation to reduce diesel PM emissions from portable engines through a series of emission standards that increase in stringency through 2020.	2/26/04 1/4/05 EO
California motor vehicle service information rule Adopted amendments to allow for the purchase of heavy duty engine emission-related service information and diagnostic tools by independent service facilities and aftermarket parts manufacturers.	1/22/04 5/20/04
Transportation Refrigeration Unit ATCM Adopted a regulation to reduce diesel PM emissions from transport refrigeration units by establishing emission standards and facility reporting requirements to streamline inspections.	12/11/03 2/26/04 11/10/04 EO
Diesel engine verification procedures Approved amendments that reduced warranty coverage to the engine only, delayed the NOx reduction compliance date to 2007, added requirements for proof-of-concept testing for new technology, and harmonized durability requirements with those of EPA.	12/11/03 2/26/04 10/17/04

Board Action	Hearing Date
Chip Reflash Approved a voluntary program and a backstop regulation to reduce heavy duty truck NOx emissions through the installation of new software in the engine's electronic control module.	12/11/03 3/27/04 3/21/05 EO
Revised tables of maximum incremental reactivity values Approved the addition of 102 more chemicals with associated maximum incremental reactivity values to existing regulation allowing these chemicals to be used in aerosol coating formulations.	12/3/03
Stationary Diesel Engines ATCM Adopted a regulation to reduce diesel PM emissions from stationary diesel engines through the use of clean fuel, lower emission standards, operational practices.	11/20/03 12/11/03 2/26/2004 9/27/04 EO
Solid waste collection vehicles Adopted a regulation to reduce toxic diesel particulate emissions from solid waste collection vehicles by over 80 percent by 2010. This measure is part of ARB's plan to reduce the risk from a wide range of diesel engines throughout California.	9/25/03 5/17/04 EO
Small off-road engines (SORE) Adopted more stringent emission standards for the engines used in lawn and garden and industrial equipment, such as string trimmers, leaf blowers, walk-behind lawn mowers, generators, and lawn tractors.	9/25/03 7/26/04 EO
Off-highway recreational vehicles Changes to riding season restrictions.	7/24/03
Clean diesel fuel Adopted a regulation to reduce sulfur levels and set a minimum lubricity standard in diesel fuel used in vehicles and off-road equipment in California, beginning in 2006.	7/24/03 5/28/04 EO
Ozone Transport Mitigation Amendments Adopted amendments to require upwind districts to (1) have the same no-net-increase permitting thresholds as downwind districts, and (2) Adopt "all feasible measures."	5/22/03 10/2/03 NOD
Zero emission vehicles Updated California's ZEV requirements to support the fuel cell car development and expand sales of advanced technology partial ZEVs (like gasoline-electric hybrids) in the near-term, while retaining a role for battery electric vehicles.	3/27/03 12/19/03 EO
Heavy duty gasoline truck standards Aligned its existing rules with new, lower federal emission standards for gasoline-powered heavy-duty vehicles starting in 2008.	12/12/02 9/23/03 EO
Low emission vehicles II Minor administrative changes.	12/12/02 9/24/03 EO
Gasoline vapor recovery systems test procedures Approved amendments to add advanced vapor recovery technology certification and testing standards.	12/12/02 7/1/03 EO 10/21/03 EO
CaRFG Phase 3 amendments Approved amendments to allow for small residual levels of MTBE in gasoline while MTBE is being phased out and replaced by ethanol.	12/12/02 3/20/03 EO
School bus Idling Adopted a measure requiring school bus drivers to turn off the bus or vehicle engine upon arriving at a school and restart it no more than 30 seconds before departure in order to limit children's exposure to toxic diesel particulate exhaust.	12/12/02 5/15/03 EO
California Interim Certification Procedures for 2004 and Subsequent Model Year Hybrid-Electric Vehicles in the Urban Transit Bus and Heavy-Duty Vehicle Classes Regulation Amendment Adopted amendments to allow diesel-path transit agencies to purchase alternate fuel buses with higher NOx limits, establish certification procedures for hybrid buses, and require lower fleet-average PM emission limits.	10/24/02 9/2/03 EO
CaRFG Phase 3 amendments Approved amendments delaying removal of MTBE from gasoline by one year to 12/31/03.	7/25/02 11/8/02 EO
Diesel retrofit verification procedures, warranty, and in-use compliance requirements Adopted regulations to specify test procedures, warranty, and in-use compliance of diesel engine PM retrofit control devices.	5/16/02 3/28/03 EO

Board Action	Hearing Date
On-board diagnostics for cars Adopted changes to the On-Board Diagnostic Systems (OBD II) regulation to improve the effectiveness of OBD II systems in detecting motor vehicle emission-related problems.	4/25/02 3/7/03 EO
Voluntary accelerated light duty vehicle retirement regulations Establishes standards for a voluntary accelerated retirement program.	2/21/02 11/18/02 EO
Residential burning Adopted a measure to reduce emissions of toxic air contaminants from outdoor residential waste burning by eliminating the use of burn barrels and the outdoor burning of residential waste materials other than natural vegetation.	2/21/02 12/18/02 EO
California motor vehicle service information rule Adopted regulations to require light- and medium-duty vehicle manufacturers to offer for sale emission-related service information and diagnostic tools to independent service facilities and aftermarket parts manufacturers.	12/13/01 7/31/02 EO
Vapor recovery regulation amendments Adopted amendments to expand the list of specified defects requiring equipment to be removed from service.	11/15/01 9/27/02 EO
Distributed generation guidelines and regulations Adopted regulations requiring the permitting by ARB of distributed generation sources that are exempt from air district permitting and approved guidelines for use by air districts in permitting non-exempt units.	11/15/01 7/23/02 EO
Low emission vehicle regulations (LEV II) Approved amendments to apply PM emission limits to all new gasoline vehicles, extend gasoline PZEV emission limits to all fuel types, and streamline the manufacturer certification process.	11/15/01 8/6/02 EO
Gasoline vapor recovery systems test methods and compliance procedures Adopted amendments to add test methods for new technology components, streamline test methods for liquid removal equipment, and***.	10/25/01 7/9/02 EO
Heavy-duty diesel trucks Adopted amendments to emissions standards to harmonize with EPA regulations for 2007 and subsequent model year new heavy-duty diesel engines.	10/25/01
Automotive coatings Adopted Air Toxic Control Measure which prohibits the sale and use in California of automotive coatings that contain hexavalent chromium or cadmium.	9/20/01 9/2/02 EO
Inboard and sterndrive marine engines Lower emission standards for 2003 and subsequent model year inboard and sterndrive gasoline-powered engines in recreational marine vessels.	7/26/01 6/6/02 EO
Asbestos from construction, grading, quarrying, and surface mining Adopted an Airborne Toxic Control Measure for construction, grading, quarrying, and surface mining operations requiring dust mitigation for construction and grading operations, road construction and maintenance activities, and quarries and surface mines to minimize emissions of asbestos-laden dust.	7/26/01 6/7/02 EO
Zero emission vehicle infrastructure and standardization of electric vehicle charging equipment Adopted amendments to the ZEV regulation to alter the method of quantifying production volumes at joint-owned facilities and to add specifications for standardized charging equipment.	6/28/01 5/10/02 EO
Pollutant transport designation Adopted amendments to add two transport couples to the list of air basins in which upwind areas are required to adopt permitting thresholds no less stringent than those adopted in downwind areas.	4/26/01
Zero emission vehicle regulation amendments Adopted amendments to reduce the numbers of ZEVs required in future years, add a PZEV category and grant partial ZEV credit, modify the ZEV range credit, allow hybrid-electric vehicles partial ZEV credit, grant ZEV credit to advanced technology vehicles, and grant partial ZEV credit for several other minor new programs.	1/25/01 12/7/01 EO 4/12/02 EO
Heavy duty diesel engines supplemental test procedures Approved amendments to extend "Not-To-Exceed" and EURO III supplemental test procedure requirements through 2007 when federal requirements will include these tests.	12/7/00

Board Action	Hearing Date
Light and medium duty low emission vehicle alignment with federal standards Approved amendments that require light and medium duty vehicles sold in California to meet the more restrictive of state or federal emission standards.	12/7/00 12/27/00 EO
Exhaust emission standards for heavy duty gas engines Adopted amendments that establish 2005 emission limits for heavy duty gas engines that are equivalent to federal limits.	12/7/00 12/27/00 EO
CaRFG Phase 3 amendments Approved amendments to regulate the replacement of MTBE in gasoline with ethanol.	11/16/00 4/25/01 EO
CaRFG Phase 3 test methods Approved amendments to gasoline test procedures to quantify the olefin content and gasoline distillation temperatures.	11/16/00 7/11/01 EO 8/28/01 EO
Antiperspirant and deodorant regulations Adopted amendments to relax a 0% VOC limit to 40% VOC limit for aerosol antiperspirants.	10/26/00
Diesel risk reduction plan Adopted plan to reduce toxic particulate from diesel engines through retrofits on existing engines, tighter standards for new engines, and cleaner diesel fuel.	9/28/00
Conditional rice straw burning regulations Adopted regulations to limit rice straw burning to fields with demonstrated disease rates reducing production by more than 5 percent.	9/28/00
Asbestos from unpaved roads Tightened an existing Air Toxic Control Measure to prohibit the use of rock containing more than 0.25% asbestos on unsurfaced roads.	7/20/00
Aerosol Coatings Approved amendments to replace mass-based VOC limits with reactivity-based limits, add a table of Maximum Incremental Reactivity values, add limits for polyolefin adhesion promoters, prohibit use of certain toxic solvents, and make other minor changes.	6/22/00 5/1/01 EO
Consumer products aerosol adhesives Adopted amendments to delete a 25% VOC limit by 2002, add new VOC limits for six categories of adhesives, prohibit the use of toxic solvents, and add new labeling and reporting requirements.	5/25/00 3/14/01 EO
Automotive care products Approved an Air Toxic Control Measure to eliminate use of perchloroethylene, methylene chloride, and trichloroethylene in automotive products such as brake cleaners and degreasers.	4/27/00 2/28/01 EO
Enhanced vapor recovery emergency regulation Adopted a four-year term for equipment certifications.	5/22/01 EO
Enhanced vapor recovery Adopted amendments to require the addition of components to reduce spills and leakage, adapt to onboard vapor recovery systems, and continuously monitor system operation and report equipment leaks immediately.	3/23/00 7/25/01 EO
Agricultural burning smoke management Adopted amendments to add marginal burn day designations, require day-specific burn authorizations by districts, and smoke management plans for larger prescribed burn projects.	3/23/00 1/22/01 EO
Urban transit buses Adopted a public transit bus fleet rule and emissions standards for new urban buses that mandates a lower fleet-average NOx emission limit, PM retrofits, lower sulfur fuel use, and purchase of specified percentages of zero emission buses in future years.	1/27/00 2/24/00 11/22/00 EO 5/29/01 EO
Small Off-Road (diesel) Equipment (SORE) Adopted amendments to conform with new federal requirements for lower and engine power-specific emission limits, and for the averaging, banking, and trading of emissions among SORE manufacturers.	1/28/00
CaRFG Phase 3 MTBE phase out Adopted regulations to enable refiners to produce gasoline without MTBE while preserving the emissions benefits of Phase 2 cleaner burning gasoline.	12/9/99 6/16/00 EO

Board Action	Hearing Date
Consumer products – mid-term measures II Adopted a regulation which adds emission limits for 2 new categories and tightens emission limits for 15 categories of consumer products.	10/28/99
Portable fuel cans Adopted a regulation requiring that new portable fuel containers, used to refuel lawn and garden equipment, motorcycles, and watercraft, be spill-proof beginning in 2001.	9/23/99 7/6/00 EO
Clean fuels at service stations Adopted amendments rescinding requirements applicable to SCAB in 1994-1995, modifying the formula for triggering requirements, and allowing the Executive Officer to make adjustments to the numbers of service stations required to provide clean fuels.	7/22/99
Gasoline vapor recovery Adopted amendments to certification and test methods.	6/24/99
Reformulated gasoline oxygenate Adopted amendments rescinding the requirement for wintertime oxygenate in gasoline sold in the Lake Tahoe Air Basin and requiring the statewide labeling of pumps dispensing gasoline containing MTBE.	6/24/99
Marine pleasure craft Adopted regulations to control emissions from spark-ignition marine engines, specifically, outboard marine engines and personal watercraft.	12/11/98 2/17/00 EO 6/14/00 EO
Voluntary accelerated light duty vehicle retirement Adopted regulation setting standards for voluntary accelerated retirement program.	12/10/98 10/22/99 EO
Off-highway recreational vehicles and engines Approved amendments to allow non-complying vehicles to operate in certain seasons and in certain ORV-designated areas.	12/10/98 10/22/99 EO
On-road motorcycles Amended on-road motorcycle regulations, to lower the tailpipe emission standards for ROG and NOx.	12/10/98
Portable equipment registration program (PERP) Approved amendments to exclude non-dredging equipment operating in OCS areas and equipment emitting hazardous pollutants, include NSPS Part OOO rock crushers, require SCR emission limits and onshore emission offsets from dredging equipment operating in OCS areas, set catalyst emission limits for gasoline engines, and relieve certain retrofitted engines from periodic source testing.	12/10/98
Liquid petroleum gas motor fuel specifications Approved amendment rescinding 5% propene limit and extending 10% limit indefinitely.	12/11/98
Reformulated gasoline Approved amendments to rescind the RVP exemption for fuel with 10% ethanol and allow for oxygen contents up to 3.7% if the Predictive Model weighted emissions to not exceed original standards.	12/11/98
Consumer products Adopted amendments to add new VOC test methods, to modify Method 310 to quantify low vapor pressure VOC (LVP-VOC) constituents, and to exempt LVP-VOC from VOC content limits	11/19/98
Consumer products Approved amendments to extend the 1999 VOC compliance deadline for several aerosol coatings, antiperspirants and deodorants, and other consumer products categories to 2002, to exempt methyl acetate from the VOC definition, and make other minor changes.	11/19/98
Low-emission vehicle program (LEV II) Adopted regulations adding exhaust emission standards for most sport utility vehicles, pick-up trucks and mini-vans, lowering tailpipe standards for cars, further reducing evaporative emission standards, and providing additional means for generating zero-emission vehicle credits.	11/5/98 9/17/99 EO
Off-road engine aftermarket parts Approved implementation of a new program to test and certify aftermarket parts in gasoline and diesel, light-duty through heavy duty, engines used in off-road vehicles and equipment.	11/19/98 10/1/99 EO 7/18/00 EO

Board Action	Hearing Date
Off-road spark ignition engines Adopted new emission standards for small and large spark ignition engines for off-road equipment, a new engine certification program, an in-use compliance testing program, and a three-year phase-in for large LSI.	10/22/98
Gasoline deposit control additives Adopted amendments to decertify pre-RFG additives, tighten the inlet valve deposit limits, add a combustion chamber deposit limit, and modify the test procedures to align with the characteristics of reformulated gasoline formulations.	9/24/98 4/5/99 EO
Stationary source test methods Adopted amendments to stationary source test methods to align better with federal methods.	8/27/98 7/2/99 EO
Locomotive MOA for South Coast Memorandum of agreement (MOA) signed by ARB, EPA and major railroads to concentrate cleaner locomotives in the South Coast by 2010 and fulfill 1994 ozone SIP commitment.	7/2/98
Gasoline vapor recovery Adopted amendments to certification and test methods to add methods for onboard refueling vapor recovery, airport refuelers, and underground tank interconnections, and make minor changes to existing methods.	5/21/98 8/27/98
Reformulated gasoline Approved amendments to rescind the wintertime oxygenate requirement, allow for sulfur content averaging, and make other minor technical amendments.	8/27/98
Ethylene oxide sterilizers Adopted amendments to the ATCM to streamline source testing requirements, add EtO limits in water effluent from control devices, and make other minor changes.	5/21/98
Chrome platers Adopted amendments to ATCM to harmonize with requirements of federal NESHAP standards for chrome plating and chromic acid anodizing facilities.	5/21/98
On-road heavy-duty vehicles Approved amendments to align on-road heavy duty vehicle engine emission standards with EPA's 2004 standards and align certification, testing, maintenance, and durability requirements with those of EPA.	4/23/98 2/26/99 EO
Small off-road engines (SORE) Approved amendments to grant a one-year delay in implementation, relaxation of emissions standards for non-handheld engines, emissions durability requirements, averaging/banking/trading, harmonization with the federal diesel engine regulation, and modifications to the production line testing requirements.	3/26/98
Heavy duty vehicle smoke inspection program Adopted amendments to require annual smoke testing, set opacity limits, and exempt new vehicles from testing for the first four years.	12/11/97 3/2/98 EO
Consumer products (hairspray credit program) Adopted standards for the granting of tradable emission reduction credits achieved by sales of hairspray products having VOC contents less than required limits.	11/13/97
Light-duty vehicle off-cycle emissions Adopted standards to control excess emissions from aggressive driving and air conditioner use in light duty vehicles and added two light duty vehicle test methods for certification of new vehicles under these standards.	7/24/97 3/19/98 EO
Consumer products Adopted amendments to add VOC limits to 18 categories of consumer products used in residential and industrial cleaning, automobile maintenance, and commercial poisons.	7/24/97
Enhanced evaporative emissions standards Adopted amendments extending the compliance date for ultra-small volume vehicle manufacturers by one year.	5/22/97
Emission reduction credit program Adopted standards for District establishment of ERC programs including certification, banking, use limitation, and reporting requirements.	5/22/97
Lead as a toxic air contaminant Adopted an amendment to designate inorganic lead as a toxic air contaminant.	4/24/97

Board Action	Hearing Date
Consumer products (hair spray) Adopted amendments to (1) delay a January 1, 1998, compliance deadline to June 1, 1999, (2) require progress plans from manufacturers, and (3) authorize the Executive Officer to require VOC mitigation when granting variances from the June 1, 1999 deadline.	3/27/97
Portable engine registration program (PERP) Adopted standards for (1) the permitting of portable engines by ARB and (2) District recognition and enforcement of permits.	3/27/97
Liquefied petroleum gas Adopted amendments to extend the compliance deadline from January 1, 1997, to January 1, 1999, for the 5% propene limit in liquefied petroleum gas used in motor vehicles.	3/27/97
Onboard diagnostics, phase II Adopted amendments to extend the phase-in of enhanced catalyst monitoring, modify misfire detection requirements, add PVC system and thermostat monitoring requirements, and require manufacturers to sell diagnostic tools and service information to repair shops.	12/12/96
Consumer products Adopted amendments to delay 25% VOC compliance date for aerosol adhesives, clarify portions of the regulation, exempt perchloroethylene from VOC definition, extend the sell-through time to three years, and add perchloroethylene reporting requirements.	11/21/96
Consumer products (test method) Adopted an amendment to add Method 310 for the testing of VOC content in consumer products.	11/21/96
Pollutant transport designation Adopted amendments to modify transport couples from the Broader Sacramento area and add couples to the newly formed Mojave Desert and Salton Sea Air Basins.	11/21/96
Diesel fuel certification test methods Approved amendments specifying the test methods used for quantifying the constituents of diesel fuel.	10/24/96 6/4/97 EO
Wintertime requirements for utility engines & off-highway vehicles Optional hydrocarbon and NOx standards for snow throwers and ice augers, raising CO standard for specialty vehicles under 25hp.	9/26/96
Large off-road diesel Statement of Principles National agreement between ARB, EPA, and engine manufacturers to reduce emissions from heavy-duty off-road diesel equipment four years earlier than expected in the 1994 SIP for ozone.	9/13/96
Regulatory improvement initiative Rescinded two regulations relating to fuel testing in response to Executive Order W-127-95.	5/30/96
Zero emission vehicles Adopted amendments to eliminate zero emission vehicle quotas between 1998 and 2002, and approved MOUs with seven automobile manufacturers to accelerate release of lower emission "49 state" vehicles.	3/28/96 7/24/96 EO
CaRFG variance requirements Approved amendments to add a per gallon fee on non-compliant gasoline covered by a variance and to make administrative changes in variance processing and extension.	1/25/96 2/5/96 EO 4/2/96 EO
Utility and lawn and garden equipment engines Adopted an amendment to relax the CO standard from 300 to 350 ppm for Class I and II utility engines.	1/25/96
National security exemption of military tactical vehicles Such vehicles would not be required to adhere to exhaust emission standards.	12/14/95
CaRFG regulation amendments Approved amendments to allow for downstream addition of oxygenates and expansion of compliance options for gasoline formulation.	12/14/95
Required additives in gasoline (deposit control additives) Terms, definitions, reporting requirements, and test procedures for compliance are to be clarified.	11/16/95
CaRFG test method amendments Approved amendments to designate new test methods for benzene, aromatic hydrocarbon, olefin, and sulfur content of gasoline.	10/26/95

Board Action	Hearing Date
Motor vehicle inspection and maintenance program Handled by BAR.	10/19/95 by BAR
Antiperspirants and deodorants, consumer products, and aerosol coating products Ethanol exemption for all products, modifications to aerosol special requirements, modifications for regulatory language consistency, modifications to VOC definition.	9/28/95
Low emission vehicle (LEV III) standards Reactivity adjustment factors, introduction of medium-duty ULEVs, window labels, and certification requirements and test procedures for LEVs.	9/28/95
Medium- and heavy-duty gasoline trucks Expedited introduction of ultra-low emission medium-duty vehicles and lower NOx emission standards for heavy-duty gasoline trucks to fulfill a 1994 ozone SIP commitment.	9/1/95
Retrofit emission standards: all vehicle classes to be included in the alternate durability test plan, kit manufacturers to be allowed two years to validate deterioration factors under the test plan, update retrofit procedures allowing manufacturers to disable specific OBDs if justified by law.	7/27/95
Gasoline vapor recovery systems Adopts revised certification and test procedures.	6/29/95
Onboard refueling vapor recovery standards 1998 and subsequent MY engine cars, LD trucks, and MD trucks less than 8500 GVWR.	6/29/1995 4/24/96 EO
Heavy duty vehicle exhaust emission standards for NOx Amendments to standards and test procedures for 1985 and subsequent MY HD engines, amendments to emission control labels, amendments to Useful Life definition and HD engines and in-use vehicle recalls.	6/29/95
Aerosol coatings regulation Adopted regulation to meet California Clean Air Act requirements and a 1994 ozone SIP commitment.	3/23/95
Periodic smoke inspection program Delays start of PSIP from 1995 to 1996.	12/8/94
Onboard diagnostics phase II Amendments to clarify regulation language, ensure maximum effectiveness, and address manufacturer concerns regarding implementation.	12/8/94
Alternative control plan (ACP) for consumer products A voluntary, market-based VOC emissions cap upon a grouping of consumer products, flexible by manufacturer that will minimize overall costs of emission reduction methods and programs.	9/22/94
Diesel fuel certification: new specifications for diesel engine certification fuel, amended oxygen specification for CNG certification fuel, and amended commercial motor vehicle liquefied petroleum gas regulations.	9/22/94
Utility and lawn and garden equipment (UGLE) engines Modification to emission test procedures, ECLs, defects warranty, quality-audit testing, and new engine compliance testing.	7/28/94
Evaporative emissions standards and test procedures Adopted evaporative emissions standards for medium-duty vehicles.	2/10/94
Off-road recreational vehicles Adopted emission control regulations for off-road motorcycles, all-terrain vehicles, go-karts, golf carts, and specialty vehicles.	1/1/94
Perchloroethylene from dry cleaners Adopted measure to control perchloroethylene emissions from dry cleaning operations.	10/1/93
Wintertime oxygenate program Amendments to the control time period for San Luis Obispo County, exemption for small retailers bordering Nevada, flexibility in gasoline delivery time, calibration of ethanol blending equipment, gasoline oxygen content test method.	9/9/93
Onboard diagnostic phase II	7/9/93
Urban transit buses Amended regulation to tighten state NOx and particulate matter (PM) standards for urban transit buses beyond federal standards beginning in 1996.	6/10/93
1-year implementation delay in emission standards for utility engines	4/8/93

Board Action	Hearing Date
Non-ferrous metal melting Adopted Air Toxic Control Measure for emissions of cadmium, arsenic, and nickel from non-ferrous metal melting operations.	1/1/93
Certifications requirements for low emission passenger cars, light-duty trucks & medium duty vehicles	1/14/93
Airborne toxic control measure for emissions of toxic metals from non-ferrous metal melting	12/10/92
Periodic self-inspection program Implemented state law establishing a periodic smoke self-inspection program for fleets operating heavy-duty diesel-powered vehicles.	12/10/92
Notice of general public interest for consumer products	11/30/92
Substitute fuel or clean fuel incorporated test procedures	11/12/92
New vehicle testing using CaRFG Phase 2 gasoline Approved amendments to require the use of CaRFG Phase 2 gasoline in the certification of exhaust emissions in new vehicle testing.	8/13/92
Standards and test procedures for alternative fuel retrofit systems	5/14/92
Alternative motor vehicle fuel certification fuel specification	3/12/92
Heavy-duty off-road diesel engines Adopted the first exhaust emission standards and test procedures for heavy-duty off-road diesel engines beginning in 1996.	1/9/92
Consumer Products - Tier II Adopted Tier II of regulations to reduce emissions from consumer products.	1/9/92
Wintertime oxygen content of gasoline Adopted regulation requiring the addition of oxygenates to gasoline during winter to satisfy federal Clean Air Act mandates for CO nonattainment areas.	12/1/91
CaRFG Phase 2 Adopted CaRFG phase 2 specifications including lowering vapor pressure, reducing the sulfur, olefin, aromatic, and benzene content, and requiring the year-round addition of oxygenates to achieve reductions in ROG, NOx, CO, oxides of sulfur (SOx) and toxics.	11/1/91
Low emissions vehicles amendments revising reactivity adjust factor (RAF) provisions and adopting a RAF for M85 transitional low emission vehicles	11/14/91
Onboard diagnostic, phase II	11/12/91
Onboard diagnostics for light-duty trucks and light & medium-duty motor vehicles	9/12/91
Utility and lawn & garden equipment Adopted first off-road mobile source controls under the California Clean Air Act regulating utility, lawn and garden equipment.	12/1/90
Control for abrasive blasting	11/8/90
Roadside smoke inspections of heavy-duty vehicles Adopted regulations implementing state law requiring a roadside smoke inspection program for heavy-duty vehicles.	11/8/90
Consumer Products Tier I Adopted Tier I of standards to reduce emissions from consumer products.	10/11/90
CaRFG Phase I Adopted CaRFG Phase I reformulated gasoline regulations to phase-out leaded gasoline, reduce vapor pressure, and require deposit control additives.	9/1/90
Low-emission vehicle (LEV) and clean fuels Adopted the landmark LEV/clean fuel regulations which called for the gradual introduction of cleaner cars in California. The regulations also provided a mechanism to ensure the availability of alternative fuels when a certain number of alternative fuel vehicles are sold.	9/1/90
Evaporative emissions from vehicles Modified test procedure to include high temperatures (up to 105 F) and ensure that evaporative emission control systems function properly on hot days.	8/9/90
Dioxins from medical waste incinerators Adopted Airborne Toxic Control Measure to reduce dioxin emissions from medical waste incinerators.	7/1/90

Board Action	Hearing Date
CA Clean Air Act guidance for permitting Approved California Clean Air Act permitting program guidance for new and modified stationary sources in nonattainment areas.	7/1/90
Consumer products Bay Area Air Quality Management District (BAAQMD)	6/14/90
Medium duty vehicle emission standards Adopted three new categories of low emission MDVs, required minimum percentages of production, and established production credit and trading.	6/14/90
Medium-duty vehicles Amended test procedures for medium-duty vehicles to require whole-vehicle testing instead of engine testing. This modification allowed enforcement of medium-duty vehicle standards through testing and recall.	6/14/90
Ethylene oxide sterilizers Adopted Airborne Toxic Control Measure to reduce ethylene oxide emissions from sterilizers and aerators.	5/10/90
Asbestos in serpentine rock Adopted Airborne Toxic Control Measure for asbestos-containing serpentine rock in surfacing applications.	4/1/90
Certification procedure for aftermarket parts	2/8/90
Antiperspirants and deodorants Adopted first consumer products regulation, setting standards for antiperspirants and deodorants.	11/1/89
Residential woodstoves Approved suggested control measure for the control of emissions from residential wood combustion.	11/1/89
On-Board Diagnostic Systems II Adopted regulations to implement the second phase of on-board diagnostic requirements which alert drivers of cars, light- trucks and medium-duty vehicles when the emission control system is not functioning properly.	9/1/89
Cars and light-duty trucks Adopted regulations to reduce ROG and CO emissions from cars and light trucks by 35 percent.	6/1/89
Architectural coatings Approved a suggested control measure to reduce ROG emissions from architectural coatings.	5/1/89
Chrome from cooling towers Adopted Airborne Toxic Control Measure to reduce hexavalent chromium emissions from cooling towers.	3/1/89
Reformulated Diesel Fuel Adopted regulations requiring the use of clean diesel fuel with lower sulfur and aromatic hydrocarbons beginning in 1993.	11/1/88
Vehicle Recall Adopted regulations implementing a recall program which requires auto manufacturers to recall and fix vehicles with inadequate emission control systems (Vehicles are identified through in-use testing conducted by the ARB).	9/1/88
Suggested control measure for oil sumps Approved a suggested control measure to reduce emissions from sumps used in oil production operations.	8/1/88
Chrome platers Adopted Airborne Toxic Control Measure to reduce emissions of hexavalent chromium emissions from chrome plating and chromic acid anodizing facilities.	2/1/88
Suggested control measure for boilers Approved suggested control measure to reduce NOx emissions from industrial, institutional, and commercial boilers, steam generators and process heaters.	9/1/87
Benzene from service stations Adopted Airborne Toxic Control Measure to reduce benzene emissions from retail gasoline service stations (Also known as Phase II vapor recovery).	7/1/87
Agricultural burning guidelines Amended existing guidelines to add provisions addressing wildland vegetation management.	11/1/86
Heavy-duty vehicle certification Amended certification of heavy-duty diesel and gasoline-powered engines and vehicles to align with federal standards.	4/1/86
Cars and light-duty trucks Adopted regulations reducing NOx emissions from passenger cars and light-duty trucks by 40 percent.	4/1/86

Board Action	Hearing Date
Sulfur in diesel fuel Removed exemption for small volume diesel fuel refiners.	6/1/85
On-Board Diagnostics I Adopted regulations requiring the use of on-board diagnostic systems on gasoline-powered vehicles to alert the driver when the emission control system is not functioning properly.	4/1/85
Suggested control measure for wood coatings Approved a suggested control measure to reduce emissions from wood furniture and cabinet coating operations.	3/1/85
Suggested control measure for resin manufacturing Approved a suggested control measure to reduce ROG emissions from resin manufacturing.	1/1/85

ATTACHMENT D
ARB ANALYSES OF KEY MOBILE SOURCE REGULATIONS AND PROGRAMS
PROVIDING EMISSION REDUCTIONS

D.1 Overview

Given the severity of California's air quality challenges and the need for ongoing emission reductions, the ARB has implemented the most stringent mobile source emissions control program in the nation. This comprehensive program relies on four fundamental approaches:

- Stringent emissions standards that minimize emissions from new vehicles and equipment;
- In-use programs that target the existing fleet and require the use of the cleanest vehicles and emissions control technologies;
- Cleaner fuels that minimize emissions during combustion; and,
- Incentive programs that remove older, dirtier vehicles and equipment and pay for early adoption of the cleanest available technologies.

This multi-faceted approach has spurred the development of increasingly cleaner technologies and fuels and achieved significant emission reductions across all mobile source sectors that go far beyond national programs or programs in other states. These efforts extend back to the first mobile source regulations adopted in the 1960s, and pre-date the federal CAA Amendments of 1970, which established the basic national framework for controlling air pollution. In recognition of the pioneering nature of the ARB's efforts, the CAA provides California unique authority to regulate mobile sources more stringently than the federal government by providing a waiver of preemption for its new vehicle emission standards under CAA §209(b). This waiver provision preserves a pivotal role for California in the control of emissions from new motor vehicles, recognizing that California serves as a laboratory for setting motor vehicle emission standards. Since then, the ARB has consistently sought and obtained waivers and authorizations for its new motor vehicle regulations. The ARB's history of progressively strengthening standards as technology advances, coupled with the waiver process requirements, ensures that California's regulations remain the most stringent in the nation. A list of regulatory actions the ARB has taken since 1985 is provided in Attachment C to highlight the scope of the ARB's actions to reduce mobile source emissions.

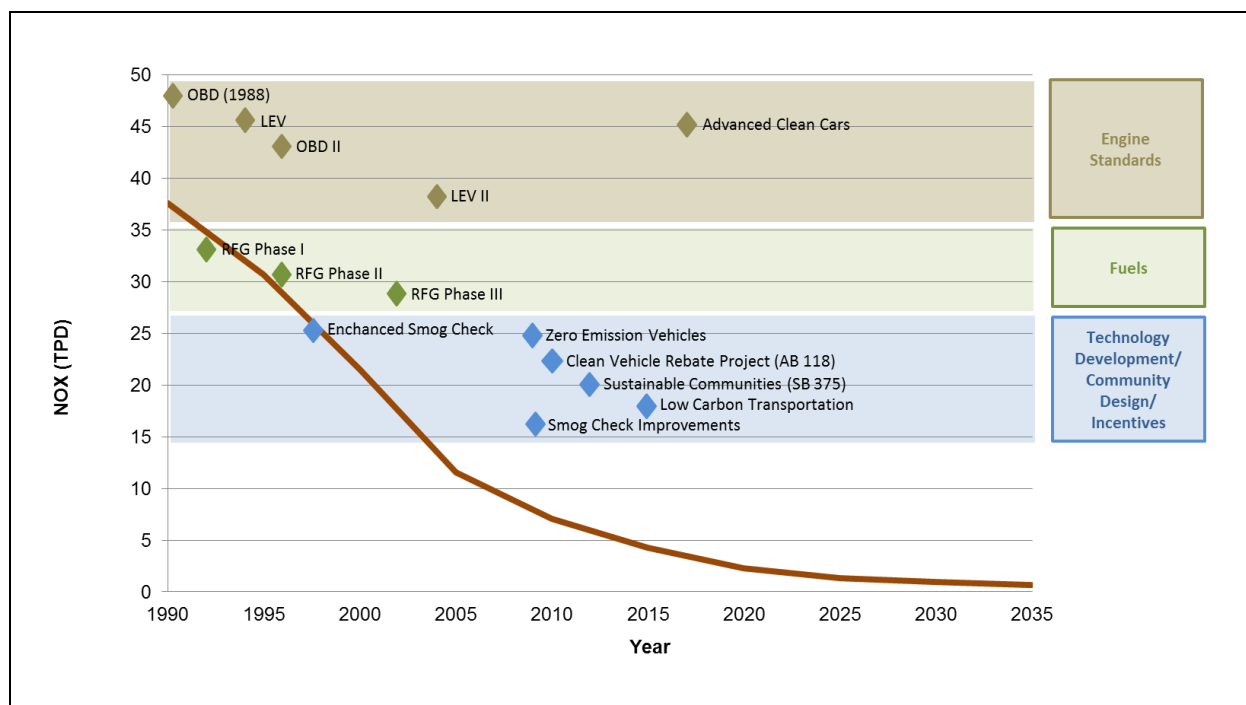
Recently, the ARB adopted numerous regulations aimed at reducing exposure to diesel particulate matter and oxides of nitrogen, from freight transport sources like heavy duty diesel trucks, transportation sources like passenger cars and buses, and off-road sources like large construction equipment. Phased implementation of these regulations will produce increasing emission reduction benefits from now until 2020 and beyond, as the regulated fleets are retrofitted, and as older and dirtier portions of the fleets are replaced with newer and cleaner models at an accelerated pace.

Further, ARB and District staff work closely on identifying and distributing incentive funds to accelerate cleanup of engines. Key incentive programs include: the Carl Moyer Program; the Goods Movement Program; the Lower-Emission School Bus Program; and the Air Quality Improvement Program (AQIP). These incentive-based programs work in tandem with regulations to accelerate deployment of cleaner technology.

D.2 Light-Duty Vehicles

Figure D-1 illustrates the trend in NO_x emissions from light-duty vehicles and key programs contributing to those reductions. As a result of these efforts, light-duty vehicle emissions in San Diego County have been reduced significantly since 1990 and will continue to go down through 2020 due to the benefits of the ARB's longstanding light-duty mobile source program. Key light-duty programs include Advanced Clean Cars (ACC), On-Board Diagnostics (OBD), Reformulated Gasoline (RFG), Incentive Programs, and the Enhanced Smog Check Program.

Figure D-1
Key Programs to Reduce Light-Duty NO_x Emissions



Since setting the nation's first motor vehicle exhaust emission standards in 1966 that led to the first pollution controls, California has dramatically tightened emission standards for light-duty vehicles. Through ARB regulations, today's new cars pollute 99% less than their predecessors did thirty years ago. In 1970, the ARB required auto manufacturers to meet the first standards to control NO_x emissions along with hydrocarbon emissions. The simultaneous control of emissions from motor vehicles and fuels led to the use of cleaner-burning reformulated gasoline (RFG) that has removed the emissions equivalent of 3.5 million vehicles from California's roads. Since the ARB first adopted it in 1990, the Low Emission Vehicle Program (LEV and LEV II) and Zero-Emission Vehicle (ZEV) Program have resulted in the production and sales of hundreds of thousands of zero-emission vehicles (ZEVs) in California.

D.2.1 Advanced Clean Cars

ARB's groundbreaking ACC program is now providing the next generation of emission reductions in California, and ushering in a new zero-emission passenger transportation system. The success of these programs is evident: California is the world's largest market for ZEVs, with over 21 models

available today, and a wide variety are now available at lower price points, attracting new consumers. As of January 2015, Californians drive 40% of all ZEVs on the road in the United States, while the U.S. makes up about half of the world market. This movement towards commercialization of advanced clean cars has occurred due to ARB's ZEV regulation, part of ACC, which affects passenger cars and light-duty trucks.

The ARB's ACC Program, approved in January 2012, is a pioneering approach of a 'package' of regulations that although separate in construction, are related in terms of the synergy developed to address both ambient air quality needs and climate change. The ACC program combines the control of smog, soot causing pollutants and greenhouse gas emissions into a single coordinated package of requirements for model years 2015 through 2025. The program assures the development of environmentally superior cars that will continue to deliver the performance, utility, and safety vehicle owners have come to expect.

The ARB's ACC program also included amendments affecting the current ZEV regulation through the 2017 model year in order to enable manufacturers to successfully meet 2018 and subsequent model year requirements. These ZEV amendments are intended to achieve commercialization through simplifying the regulation and pushing technology to higher volume production in order to achieve cost reductions. The ACC Program benefits will increase over time as new cleaner cars enter the fleet displacing older and dirtier vehicles.

D.2.2 On Board Diagnostics

California's first OBD regulation required manufacturers to monitor some of the emission control components on vehicles starting with the 1988 model year. In 1989, the ARB adopted OBD II, which required 1996 and subsequent model year passenger cars, light-duty trucks, and medium-duty vehicles and engines to be equipped with second generation OBD systems. OBD systems are designed to identify when a vehicle's emission control systems or other emission-related computer-controlled components are malfunctioning, causing emissions to be elevated above the vehicle manufacturer's specifications. The ARB subsequently strengthened OBD II requirements and added OBD II specific enforcement requirements for 2004 and subsequent model year passenger cars, light-duty trucks, and medium-duty vehicles and engines.

D.2.3 Reformulated Gasoline

Since 1996, ARB has been regulating the formulation of gasoline resulting in California gasoline being the cleanest in the world. California's cleaner-burning gasoline regulation is one of the cornerstones of the state's efforts to reduce air pollution and cancer risk. Reformulated gasoline is fuel that meets specifications and requirements established by the ARB. The specifications reduced motor vehicle toxics by about 40% and reactive organic gases by about 15%. The results from cleaning up fuel can have an immediate impact as soon as it is sold in California. Vehicle manufacturers design low-emission emission vehicle to take full advantage of cleaner-burning gasoline properties.

D.2.4 Incentive Programs (Light-Duty Vehicles)

There are a number of different incentive programs focusing on light-duty vehicles that produce extra emission reductions beyond traditional regulations. The incentive programs work in two ways,

encouraging the retirement of dirty older cars and encouraging the purchase of a cleaner vehicle.

Voluntary accelerated vehicle retirement, or “car scrap” programs, provide monetary incentives to vehicle owners to retire older, more polluting vehicles. The purpose of these programs is to reduce fleet emissions by accelerating the turnover of the existing fleet and subsequent replacement with newer, cleaner vehicles. Both state and local vehicle retirement programs are available.

California’s voluntary vehicle retirement program is administered by the Bureau of Automotive Repair (BAR) and provides \$1,000 per vehicle and \$1,500 for low-income consumers for unwanted vehicles that have either failed or passed their last Smog Check Test and that meet certain eligibility guidelines. This program is referred to as the Consumer Assistance Program.

The Enhanced Fleet Modernization Program (EFMP) was approved by the AB 118 legislation to augment California’s existing vehicle retirement program. Approximately \$30 million was available annually through 2015 to fund the EFMP, via a \$1 increase in vehicle registration fees. The ARB developed the program in consultation with BAR. The program is jointly administered by both BAR for vehicle retirement, and local air districts for vehicle replacement.

Other programs, in addition to vehicle retirement programs, help to clean up the light-duty fleet. The AQIP, established by AB 118, is an ARB voluntary incentive program to fund clean vehicle and equipment projects. The Clean Vehicle Rebate Project (CVRP) is one of the current projects under the AQIP. CVRP, started in 2009, is designed to accelerate widespread commercialization of zero-emission vehicles and plug-in hybrid electric vehicles by providing consumer rebates up to \$2,500 to partially offset the higher cost of these advanced technologies. The CVRP is administered statewide by the California Center for Sustainable Energy. In Fiscal Years 2009-2012, \$26.1 million, including \$2 million provided by the California Energy Commission, funded approximately 8,000 rebates. In June 2012, the ARB allocated up to \$15-21 million to the CVRP as outlined in the AQIP FY2012-2013 Funding Plan.

D.2.5 California Enhanced Smog Check Program

BAR is the state agency charged with administration and implementation of the Smog Check Program. The Smog Check Program is designed to reduce air pollution from California registered vehicles by requiring periodic inspections for emission-control system problems, and by requiring repairs for any problems found. In 1998, the Enhanced Smog Check program began in which Smog Check stations relied on the BAR-97 Emissions Inspection System (EIS) to test tailpipe emissions with either a Two-Speed Idle (TSI) or Acceleration Simulation Mode (ASM) test depending on where the vehicle was registered. For instance, vehicles registered in urbanized areas received an ASM test, while vehicles in rural areas or received a TSI test.

In 2009, the following requirements were added in to improve and enhance the Smog Check Program, making it more inclusive of motor vehicles and effective on smog reductions:

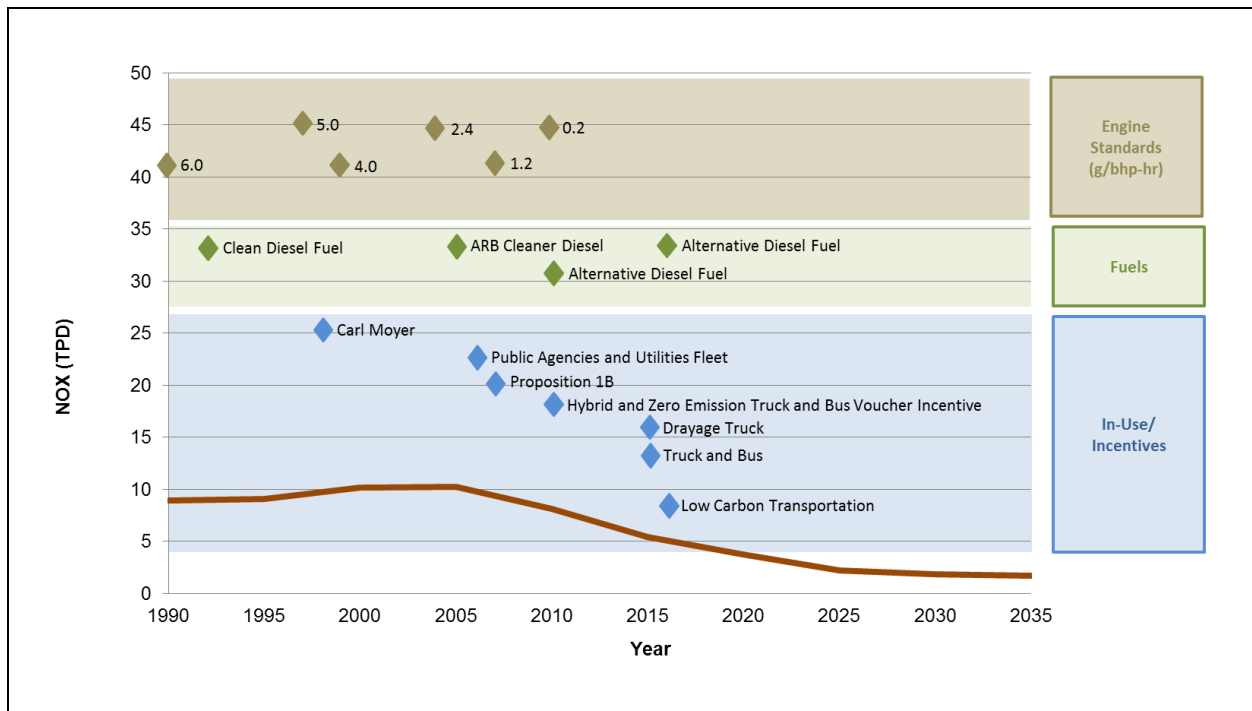
- Low pressure evaporative test;
- More stringent pass/fail cutpoints;
- Visible smoke test; and
- Inspection of light- and medium-duty diesel vehicles.

The next major change was due to AB 2289, adopted in October 2010, a new law restructuring California's Smog Check Program, streamlining and strengthening inspections, increasing penalties for misconduct, and reducing costs to motorists. This new law sponsored by the ARB and the BAR, promised faster and less expensive Smog Check inspections by taking advantage of OBD software installed on all vehicles since 2000. The new law also directs vehicles without this equipment to high-performing stations, helping to ensure that these cars comply with current emission standards. This program will reduce consumer costs by having stations take advantage of diagnostic software that monitors pollution-reduction components and tailpipe emissions. Beginning mid-2013, testing of passenger vehicles using OBD was required on all vehicles model years 2000 or newer.

D.3 Heavy-Duty Trucks

Figure D-2 illustrates the trend in NO_x emissions from heavy-duty vehicles and key programs contributing to those reductions. As a result of these efforts, heavy-duty vehicle emissions in San Diego County have also been reduced significantly since 1990 and will continue to go down through 2020 due to the benefits of the ARB's longstanding heavy-duty mobile source program. Key programs include Heavy-Duty Engine Standards, Clean Diesel Fuel, Truck and Bus Regulation and Incentive Programs.

Figure D-2
Key Programs to Reduce Heavy-Duty Emissions



D.3.1 Heavy-Duty Engine Standards

Since 1990, heavy-duty engine NO_x emission standards have become dramatically more stringent, dropping from 6 grams per brake horsepower-hour (g/bhp-hr) in 1990 down to the current 0.2 g/bhp-hr standard, which took effect in 2010. In addition to mandatory NO_x standards, there have been

several generations of optional lower NO_x standards put in place over the past 15 years. Most recently in 2015, engine manufacturers can certify to three optional NO_x emission standards of 0.1 g/bhp-hr, 0.05 g/bhp-hr, and 0.02 g/bhp-hr (i.e., 50 percent, 75 percent, and 90 percent lower than the current mandatory standard of 0.2 g/bhp-hr). The optional standards allow local air districts and the ARB to preferentially provide incentive funding to buyers of cleaner trucks, to encourage the development of cleaner engines.

D.3.2 Clean Diesel Fuel

Since 1993, the ARB has required that diesel fuel have a limit on the aromatic hydrocarbon content and sulfur content of the fuel. Diesel powered vehicles account for a disproportionate amount of the diesel particulate matter which is considered a toxic air contaminant. In 2006, the ARB required a low-sulfur diesel fuel to be used not only by on-road diesel vehicles but also for off-road engines. The diesel fuel regulation allows alternative diesel formulations as long as emission reductions are equivalent to the ARB formulation.

D.3.3 Cleaner In-Use Heavy-Duty Trucks (Truck and Bus Regulation)

The Truck and Bus Regulation was first adopted in December 2008. This rule represents a multi-year effort to turn over the legacy fleet of engines and replace them with the cleanest technology available. In December 2010, the ARB revised specific provisions of the in-use heavy-duty truck rule, in recognition of the deep economic effects of the recession on businesses and the corresponding decline in emissions.

Starting in 2012, the Truck and Bus Regulation phases in requirements applicable to an increasingly larger percentage of the truck and bus fleet over time. By 2023, nearly all older vehicles would need to be upgraded to have exhaust emissions meeting 2010 model year engine emissions levels. The regulation applies to nearly all diesel-fueled trucks and buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds that are privately or federally owned, including on-road and off-road agricultural yard goats, and privately and publicly owned school buses. Moreover, the regulation applies to any person, business, school district, or federal government agency that owns, operates, leases or rents affected vehicles. The regulation also establishes requirements for any in-state or out-of-state motor carrier, California-based broker, or any California resident who directs or dispatches vehicles subject to the regulation. Finally, California sellers of a vehicle subject to the regulation would have to disclose the regulation's potential applicability to buyers of the vehicles. Approximately 170,000 businesses in nearly all industry sectors in California, and almost a million vehicles that operate on California roads each year are affected. Some common industry sectors that operate vehicles subject to the regulation include: for-hire transportation, construction, manufacturing, retail and wholesale trade, vehicle leasing and rental, bus lines, and agriculture.

ARB compliance assistance and outreach activities that are key support of the Truck and Bus Regulation include:

- The Truck Regulations Upload and Compliance Reporting System (TRUCRS), an online reporting tool developed and maintained by ARB staff;
- The Truck and Bus regulation's fleet calculator, a tool designed to assist fleet owners in evaluating various compliance strategies;

- Targeted training sessions all over the state; and
- Out-of-state training sessions conducted by a contractor.

ARB staff also develops regulatory assistance tools, conducts and coordinates compliance assistance and outreach activities, administers incentive programs, and actively enforces the entire suite of regulations. Accordingly, the ARB's approach to ensuring compliance is based on a comprehensive outreach and education effort.

D.3.4 Incentive Programs

There are a number of different incentive programs focusing on heavy-duty vehicles that produce extra emission reductions beyond traditional regulations. The incentive programs encourage the purchase of a cleaner truck.

Several state and local incentive funding pools have been used historically -- and remain available -- to fund the accelerated turnover of on-road heavy-duty vehicles. Since 1998, the Carl Moyer Program (Moyer Program) has provided funding for replacement, new purchase, repower and retrofit of trucks. Beginning in 2008, the Goods Movement Emission Reduction Program, funded by Proposition 1B, has funded cleaner trucks for the region's transportation corridors; the final increment of funds will implement projects through 2018.

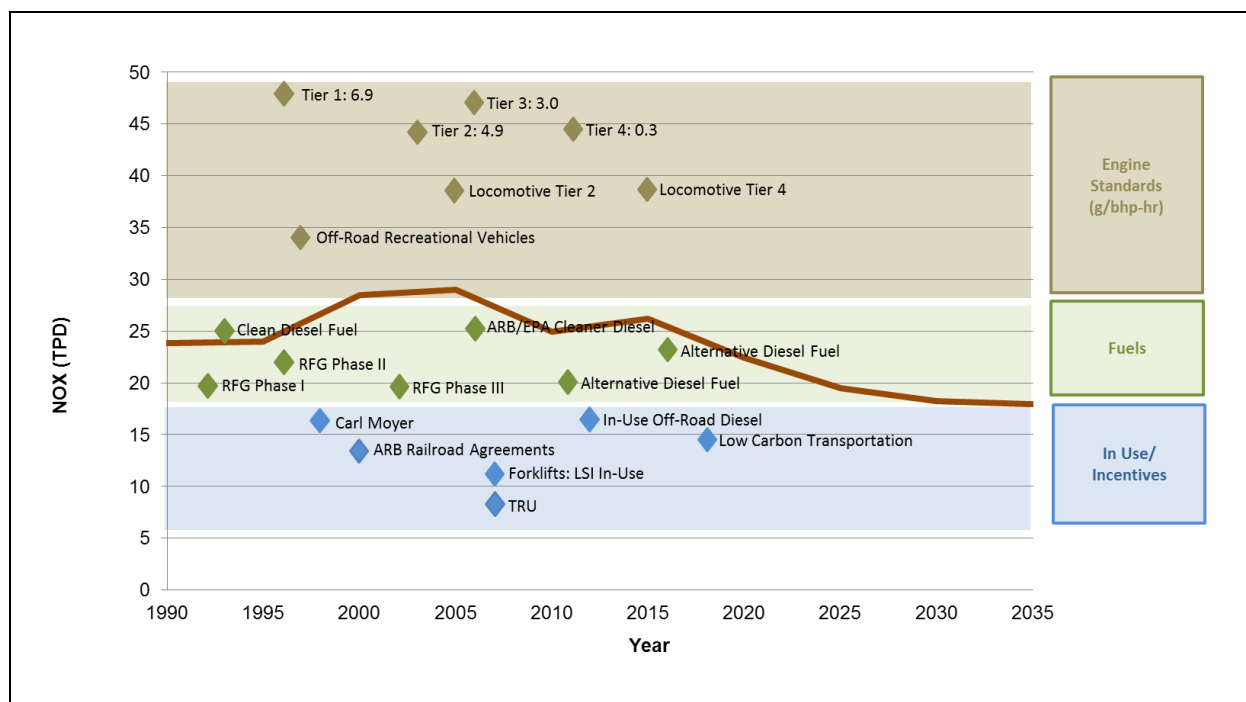
The AQIP has funded the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) since 2010, and continued San Diego County participation is expected. The ARB has also administered a Truck Loan Assistance Program since 2009.

D.4 Off-Road Sources

Off-road sources encompass equipment powered by an engine that does not operate on the road. Sources vary from ships to lawn and garden equipment and for example, include sources like locomotives, aircraft, tractors, harbor craft, off-road recreational vehicles, construction equipment, forklifts, and cargo handling equipment.

Figure D-3 illustrates the trend in NO_x emissions from off-road equipment and key programs contributing to those reductions. As a result of these efforts, off-road emissions in San Diego County have been reduced significantly since 1990 and will continue to go down through 2020 due to the benefits of the ARB's and the EPA's longstanding programs. Key programs include Off-Road Engine Standards, Locomotive Engine Standards, Clean Diesel Fuel, Cleaner In-Use Off-Road Regulation and In-Use Large-Spark Ignition (LSI) Fleet Regulation.

**Figure D-3
Key Programs to Reduce Off-Road Emissions**



D.4.1 Off-Road Engine Standards

The CAA preempts states, including California, from adopting requirements for new off-road engines less than 175 hp used in farm or construction equipment. California may adopt emission standards for in-use off-road engines pursuant to CAA §209(e)(2), but must receive authorization from the EPA before it may enforce the adopted standards.

The ARB first approved regulations to control exhaust emissions from small off-road engines (SORE) such as lawn and garden equipment in December 1990, with amendments in 1998 and 2003. These regulations were implemented through three tiers of progressively more stringent exhaust emission standards that were phased in between 1995 and 2008.

Manufacturers of forklift engines are subject to new engine standards for both diesel and LSI engines. Off-road diesel engines were first subject to engine standards and durability requirements in 1996 while the most recent Tier 4 Final emission standards were phased in starting in 2013. Tier 4 emission standards are based on the use of advanced after-treatment technologies such as diesel particulate filters and selective catalytic reduction. LSI engines have been subject to new engine standards that include both criteria pollutant and durability requirements since 2001 with the cleanest requirements phased-in starting in 2010.

D.4.2 Locomotive Engine Standards

The CAA and EPA national locomotive regulations expressly preempt states and local governments

from adopting or enforcing “any standard or other requirement relating to the control of emissions from new locomotives and new engines used in locomotives” (the EPA interpreted new engines in locomotives to mean remanufactured engines, as well). The EPA has approved two sets of national locomotive emission regulations (1998 and 2008). In 1998, the EPA approved the initial set of national locomotive emission regulations. These regulations primarily emphasized NO_x reductions through Tier 0, 1, and 2 emission standards. Tier 2 NO_x emission standards reduced older uncontrolled locomotive NO_x emissions by up to 60%, from 13.2 to 5.5 g/bhp-hr.

In 2008, the EPA approved a second set of national locomotive regulations. Older locomotives upon remanufacture are required to meet more stringent particulate matter (PM) emission standards which are about 50% cleaner than Tier 0-2 PM emission standards. The EPA refers to the PM locomotive remanufacture emission standards as Tier 0+, Tier 1+, and Tier 2+. The new Tier 3 PM emission standard (0.1 g/bhp-hr) for model years 2012-2014, is the same as the Tier 2+ remanufacture PM emission standard. The 2008 regulations also included new Tier 4 (2015 and later model years) locomotive NO_x and PM emission standards. The EPA Tier 4 NO_x and PM emission standards further reduced emissions by approximately 95% from uncontrolled levels.

D.4.3 Clean Diesel Fuel

Since 1993, the ARB has required that diesel fuel have a limit on the aromatic hydrocarbon content and sulfur content of the fuel. Diesel powered vehicles account for a disproportionate amount of the diesel particulate matter which is considered a toxic air contaminant. In 2006, the ARB required a low-sulfur diesel fuel to be used not only by on-road diesel vehicles but also for off-road engines. The diesel fuel regulation allows alternative diesel formulations as long as emission reductions are equivalent to the ARB formulation.

D.4.4 Cleaner In-Use Off-Road Equipment (Off-Road Regulation)

The Off-Road Regulation which was first approved in 2007 and subsequently amended in 2010 in light of the impacts of the economic recession. These off-road vehicles are used in construction, manufacturing, the rental industry, road maintenance, and airport ground support and landscaping. In December 2011, the Off-Road Regulation was modified to include on-road trucks with two diesel engines.

The Off-Road Regulation will significantly reduce emissions of diesel PM and NO_x from the over 150,000 in-use off-road diesel vehicles that operate in California. The regulation affects dozens of vehicle types used in thousands of fleets by requiring owners to modernize their fleets by replacing older engines or vehicles with newer, cleaner models, retiring older vehicles or using them less often, or by applying retrofit exhaust controls.

The Off-Road Regulation imposes idling limits on off-road diesel vehicles, requires a written idling policy, and requires a disclosure when selling vehicles. The regulation also requires that all vehicles be reported to the ARB and labeled, restricts the addition of older vehicles into fleets, and requires fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing verified exhaust retrofits. The requirements and compliance dates of the Off-Road Regulation vary by fleet size.

Fleets will be subject to increasingly stringent restrictions on adding older vehicles. The regulation also sets performance requirements. While the regulation has many specific provisions, in general by each compliance deadline, a fleet must demonstrate that it has either met the fleet average target for that year, or has completed the Best Available Control Technology requirements. The performance requirements of the Off-Road Regulation are phased in from January 1, 2014 through January 1, 2019.

Compliance assistance and outreach activities in support of the Off-Road Regulation include:

- The Diesel Off-road On-line Reporting System (DOORS), an online reporting tool developed and maintained by ARB staff.
- The Diesel Hotline (866-6DIESEL), which provides the regulated public with questions about the regulations and access to ARB staff. Staff is able to respond to questions in English, Spanish and Punjabi.
- The Off-road Listserv, providing equipment owners and dealerships with timely announcement of regulatory changes, regulatory assistance documents, and reminders for deadlines.

D.4.5 LSI In-Use Fleet Regulation

Forklift fleets can be subject to either the LSI fleet regulation, if fueled by gasoline or propane, or the off-road diesel fleet regulation. Both regulations require fleets to retire, repower, or replace higher-emitting equipment in order to maintain fleet average standards. The LSI fleet regulation was originally adopted in 2007 with requirements beginning in 2009. While the LSI fleet regulation applies to forklifts, tow tractors, sweeper/scrubbers, and airport ground support equipment, it maintains a separate fleet average requirement specifically for forklifts. The LSI fleet regulation requires fleets with four or more LSI forklifts to meet fleet average emission standards.

ATTACHMENT E
PRE-BASELINE BANKED EMISSION REDUCTION CREDITS

Table E-1
District Banking Registry Summary
Emission Reduction Credits Issued in 2012 and Earlier

Company Name	Certificate Number	NOx	VOC	Cumulative Totals	
		(TPY)	(TPY)	NOx	VOC
Applied Energy LLC	2010-000018-01	34.55		34.55	0.0
Cabrillo Enterprises, LLC	080527-01		1.25	34.55	1.25
Cabrillo Power II, LLC	978938-05	35.30		69.85	1.25
	981518-01	2.30		72.15	1.25
Callaway Golf Co.	2012-ERC-000019		6.09	72.15	7.34
	2012-ERC-000020		6.09	72.15	13.43
City of San Diego, Metropolitan Wastewater Dept.	950766-06		0.38	72.15	13.81
	970821-02		22.76	72.15	36.57
Dynergy	2011-000050-01	0.95		73.10	36.57
General Dynamics Properties, Inc.	970809-02	1.26		74.36	36.57
	970809-05		0.23	74.36	36.80
Grey K. Environmental Fund, LP	983809-01		25.10	74.36	61.90
	060328-01	1.90		76.26	61.90
	060328-02	2.20		78.46	61.90
	060328-03		2.90	78.46	64.80
	060328-04		0.54	78.46	65.34
	060328-05		0.10	78.46	65.44
	060328-06		0.30	78.46	65.74
	060803-04		36.70	78.46	102.44
	070731-01		20.70	78.46	123.14
Hanson Aggregates, Pacific SW Region	980772-01	0.93		79.39	123.14
	980772-03		0.26	79.39	123.40
Hughes-Aircraft Co., Electro-Opti Cal Systems	940261-01		1.06	79.39	124.46
	940261-02		0.22	79.39	124.68
Kyocera America	2012-ERC-000022	16.70		96.09	124.68
	2012-ERC-000023		7.60	96.09	132.28
Muht-Hei, Inc.	981002-01		0.18	96.09	132.46
	981002-02		0.18	96.09	132.64
	981002-03		0.18	96.09	132.82
	981002-04		0.18	96.09	133.00
	981002-05		0.57	96.09	133.57
	981002-06		0.19	96.09	133.76
	981002-07		2.23	96.09	135.99
	981002-08		1.28	96.09	137.27
	981002-09		0.18	96.09	137.45
	981002-10		2.07	96.09	139.52
	981002-11		1.28	96.09	140.80
	981002-12		0.57	96.09	141.37
National Steel & Shipbuilding	40995-02	0.18		96.27	141.37
	40995-03		0.60	96.27	141.97
	40996-02	0.04		96.31	141.97
	40997-02	0.32		96.63	141.97
	40997-03		0.02	96.63	141.99

Table E-1 (continued)
District Banking Registry Summary
Emission Reduction Credits Issued in 2012 and Earlier

Company Name	Certificate Number	NO _x	VOC	Cumulative Totals	
		(TPY)	(TPY)	NO _x	VOC
Naval Air Station, North Island	991014-01	8.00		104.63	141.99
	991015-01	3.30		107.93	141.99
	991016-01	18.70		126.63	141.99
Naval Station, San Diego	950949-01	4.83		131.46	141.99
	940206-01	0.67		132.13	141.99
	940206-03		0.05	132.13	142.04
Navy Region Southwest	990223-01	12.02		144.15	142.04
Northrop-Grumman Ryan Aeronautical Center	975000-01		1.20	144.15	143.24
Olduvai Gorge LLC	070430-01	2.00		146.15	143.24
	070502-01	14.72		160.87	143.24
	070822-01	1.20		162.07	143.24
	070822-02		0.10	162.07	143.34
	070822-04		11.05	162.07	154.39
	071004-01		10.80	162.07	165.19
	071004-02	12.00		174.07	165.19
	080527-01		16.90	174.07	182.09
	080722-01		21.18	174.07	203.27
Otay Mesa Generating Co., LLC	000427-05	0.78		174.84	203.27
	000224-01	4.40		179.24	203.27
Performance Contracting Inc.	071217-01		1.00	179.24	204.27
SDG&E	983811-01	4.00		183.24	204.27
	060324-01		0.40	183.24	204.67
	060324-02	19.90		203.14	204.67
Sherwin Williams	987553-01		7.46	203.14	212.13
Shipyard Supplies, Inc.	060824-02		1.00	203.14	213.13
	070529-01		1.00	203.14	214.13
Solar Turbines	970123-04	10.00		213.14	214.13
	950562-01		0.60	213.14	214.73
Southern California Edison Company	950171-01	0.51		213.65	214.73
	950171-03		0.02	213.65	214.75
Surface Technologies	990325-01		1.48	213.65	216.23
United States Marine Corps	030507-01	3.00		216.65	216.23
US Foam	974375-03		0.10	216.65	216.33
SW Division, Naval Facilities Engineering Cmd.	954185-01		2.00	216.65	218.33
	960709-01		9.00	216.65	227.33
	970311-01		13.00	216.65	240.33
	980511-03		3.15	216.65	243.48
	980521-02		13.25	216.65	256.73
	980529-02		7.40	216.65	264.13
Unisys Corporation	901238-01		3.66	216.65	267.79
	921410-01		1.25	216.65	269.04
	940577-01		2.95	216.65	271.99

Table E-1 (continued)
District Banking Registry Summary
Emission Reduction Credits Issued in 2012 and Earlier

Company Name	Certificate Number	NOx	VOC	Cumulative Totals	
		(TPY)	(TPY)	NOx	VOC
USN Communications Station	940560-01	2.40		219.05	271.99
	940560-04		0.05	219.05	272.04
	940561-01	0.12		219.17	272.04
	940561-03		0.00	219.17	272.04
	940562-01	0.12		219.29	272.04
	940562-03		0.00	219.29	272.04
Veterans Administration Hospital	979555-01	1.90		221.19	272.04
TOTALS (tons/year)				221.19	272.04
TOTALS (tons/day)				0.61	0.75

ATTACHMENT F

ANALYSES OF POTENTIAL ADDITIONAL STATIONARY SOURCE CONTROL MEASURES

F.1 Petroleum Storage Tanks

This source category is regulated by District Rule 61.1 (Receiving and Storing Volatile Organic Compounds at Bulk Plants and Bulk Terminals), which is applicable to large storage tanks for gasoline and other high volatility motor vehicle fuels. Based on emission inventory information and updated equipment descriptions, estimated emissions from this source category are about 46 tons per year. Rule 61.1 has standards for fittings for internal floating roof tanks, external floating roof tanks, and fixed roof tanks and requires Best Available Control Technology (BACT) for new or replacement rim seals for external and internal floating roof tanks.

SCAQMD Rule 1178 (Further Reductions of VOC Emissions from Storage Tanks at Petroleum Facilities) has further control measures for this source category. This rule is applicable to above ground storage tanks at petroleum facilities emitting more than 20 of VOC tons per year. The rule specifies rim seal types and fittings for external and internal floating roof tanks and fixed roof tanks. The rule also required all external floating roof tanks subject to the rule be domed by July 1, 2008.

San Diego County has two petroleum storage facilities that emit more than 20 tons per year. Examination of the existing rim seals and fittings for the storage tanks at these facilities indicates that most of the existing seals and fittings at these facilities would meet the standards in SCAQMD Rule 1178. Based on emission factors in the SCAQMD Rule 1178 staff report, if the standards of SCAQMD Rule 1178 were incorporated in Rule 61.1 the estimated emission reduction potential would be about 21 tons per year. About 40% of the emission reduction potential (nine tons) would result from upgrading rim seals. However, since ongoing BACT adherence is required by Rule 61.1 for rim seal replacement, these emission reductions will be achieved over time by existing Rule 61.1. The remaining potential emission reduction benefit of the Rule 1178 standards would be approximately 12 tons per year, or 0.03 tons per day, from the more stringent requirements for fittings and the requirement for external floating roof tanks to be domed. Based on this initial evaluation, the District does not plan further evaluation for rule development for this source category because of the very limited VOC emission reduction potential.

F.2 Mobile Transport Tanks Loading

This source category is regulated by District Rule 61.2 (Transfer of Organic Compounds into Mobile Transport Tanks). Rule 61.2 controls vapors displaced by loading of mobile transport tanks with gasoline and other high volatility fuels from bulk terminals and vapor and liquid leaks during the loading process. The primary standard of Rule 61.2 requires a 90% emission reduction for all VOC vapors displaced during the transport tank loading process. Based on emission inventory information, total estimated VOC emissions in San Diego County due to vapor displacement are about 12 tons per year from three bulk terminal loading rack facilities. San Joaquin Valley Air Pollution Control District (SJVAPCD) Rule 4621 (Gasoline Transfer into Stationary Storage Containers, Delivery Vessels and Bulk Plants) requires a 95% emission reduction for displaced VOC vapors. Source testing data for the largest San Diego County facility shows that it consistently achieves greater than 97% control of VOC vapors released in the loading process. The estimated emission reduction potential for the two remaining facilities is about 2.8 tons per year, or 0.01 tons per day, if they were required to meet a 95% control level instead of the 90% control level in existing Rule 61.2. Based on this initial evaluation, the District does not plan further evaluation for

this source category at this time because of the very limited VOC emission reduction potential.

F.3 Further Control of Architectural Coatings

District Rule 67.0, the District's previous Architectural Coatings Rule, was repealed effective January 1, 2016, in favor of new Rule 67.0.1, effective January 1, 2016. The rule incorporated more stringent VOC limits found in ARB's statewide Suggested Control Measures (SCM),⁵⁵ and SCAQMD Rule 1113 (last amended September 6, 2013). It should be noted that the ARB SCM was based upon the 2006 version of SCAQMD Rule 1113.

While generally similar to the SCM, Rule 1113 contains more stringent VOC limits in specific categories of coatings. These include nonflats, nonflat high gloss, aluminum roof, dry fog, faux finishing, fire resistive, floor, form release compounds, graphic arts (sign paints), metallic pigmented, rust preventative, stains, waterproofing membranes, and zinc-rich primers. During Rule 67.0.1 adoption, an incremental cost-effectiveness was determined to compare to the more stringent limits of Rule 1113. It was determined that the more stringent limits, going beyond what the SCM requires, could reduce approximately 2.4 tons per day from the source category if adopted in San Diego County. However, the additional limits were not found to be cost-effective to adopt in San Diego County (approximately \$30,000 per ton of VOC reduced), and thus were not included in the final rule. Based on this evaluation, the District does not plan further evaluation for this source category until more stringent limits can be cost-effectively controlled within the District's thresholds.

F.4 Aerospace Manufacturing Operations

Emissions in this category have greatly declined in San Diego County since 1990 due to implementation of District Rule 67.9 (Aerospace Coating Operations), the decline in government funding for aerospace operations and, in particular, the closing of one large facility. All operations now primarily involve maintenance and rework. No aerospace manufacturing operations occur in the County. Based on emission inventory information, total VOC emissions from this source category are approximately 30 tons per year.

Coating limits in Rule 67.9 generally align with comparable rules at other air districts. SCAQMD Rule 1124 (Aerospace Assembly and Component Manufacturing Operations) has slightly lower VOC limits in some coating categories such as adhesive bonding primers, antichafe coatings, dry lubricative materials (nonfastener), form release coatings, fuel tank coatings, paint strippers, and sealants. Total estimated VOC emissions in San Diego County for materials in these coating categories, and for strippers that exceed the limits in SCAQMD Rule 1124, are less than four tons per year. Precise emission reductions have not been tabulated, but are expected to be less than two tons per year (0.005 tons per day).

Despite the limited amount of potential VOC emission reductions, the District may update the existing rule in the future. The existing rule was last revised in 1997, and may need to be revised to reflect current best practices and available products.

⁵⁵ A Suggested Control Measures (SCM) is a "model rule", developed by the ARB for source categories where statewide consistency in control requirements is particularly desirable, that local air districts can copy for their rules for the covered source category.

F.5 Graphic Arts Operations

This source category is regulated by District Rule 67.16 (Graphic Arts Operations). Based on emission inventory information at the time of amending the rule in 2011, total estimated VOC emissions from this source category were about 64 tons per year. The emissions result from printing processes or related coating processes.

SCAQMD Rule 1130 (Graphic Arts) has lower VOC limits than Rule 67.16 for fountain solutions. If the SCAQMD Rule 1130 VOC limits were incorporated in Rule 67.16, the estimated potential VOC emission reductions would be about seven tons per year, or 0.02 tons per day. Rule 1130 also has lower VOC limits than Rule 67.16 in several specialty ink or solvent cleaning categories (for example, flexographic ink on porous substrates and flexographic printing cleanup). While none of these materials have been identified as being used in San Diego County to date, if usage was occurring and the County adopted similar standards to Rule 1130, the estimated potential VOC emission reductions would be almost 11 tons per year, or 0.03 tons per day.

Based on this initial evaluation, the District does not plan further evaluation for the source category at this time because of the very limited VOC emission reduction potential.

F.6 Marine Coating Operations

District Rule 67.18 (Marine Coating Operations) regulates VOC emissions from coating of marine vessels, including ships and pleasure boats. Based on emission inventory information, total VOC emissions from this source category are approximately 237 tons per year, or 0.65 tons per day. VOC limits in Rule 67.18 are generally consistent with SCAQMD Rule 1106 (Marine Coating Operations). Specifically for pleasure craft, some coating limits in San Diego County are more stringent than Rule 1106, which include antenna coatings, antifoulants for aluminum substrates, high gloss coatings, pretreatment wash primers, and special markings.

In other pleasure craft coating categories, such as extreme high gloss topcoats, SCAQMD has a lower VOC content limit. However, as noted in the *“2008 Eight-Hour Ozone Reasonably Available Control Technology (RACT) Demonstration for San Diego County,”* industry and vessel owners in San Diego and Ventura Counties have indicated that, while compliant coatings at the lower 490 grams per liter (g/l) limit are available, they exhibited durability and gloss retention concerns when applied. Thus, the higher VOC content limit material was generally accepted for use in extreme high gloss topcoat applications. The industry-accepted extreme high gloss coatings available for pleasure craft currently do not meet the 490 g/l limit established by SCAQMD, but are still in compliance with Rule 67.18.

Further emission reductions by lowering the extreme high gloss coatings limits may be possible in the future, but would not be substantial. Additional emission reductions from updates to Rule 67.18 would more likely occur by lowering the VOC limit of materials used in the cleaning process. It is estimated that an additional four tons per year, or 0.01 tons per day, of additional VOC emission reductions could occur should the VOC limit of cleaning materials be lowered to 25 g/l. The District will be evaluating this source category during the next three years for further rule development.

F.7 Adhesive and Sealant Applications

This source category is regulated by District Rule 67.21 (Adhesive Material Application Operations). Potential emission reductions were estimated by comparing to SCAQMD Rule 1168 (Adhesive and Sealant Applications), which has more stringent VOC content limits than Rule 67.21 in several adhesive categories. Total VOC emissions in San Diego County from this category are estimated at approximately 827 tons per year, based on the emission inventory. Nearly all of the emissions and potential reductions (339 tons per year, or 0.9 tons per day) that would be affected by adoption of Rule 1168 requirements are from non-permitted sources.

Although the estimated emission reductions are relatively large, the estimate does not account for penetration of the current San Diego County market by low VOC adhesives sold in the South Coast region. Information from adhesive suppliers indicates that they typically provide all of Southern California with the same products. Consequently, it is likely that potential emission reductions have already occurred, and any further reductions from permitted sources would be minimal. Despite this conclusion, the District is including the potential emission reductions that could be possible, assuming products in the South Coast region were being used in San Diego County, for the purposes of this RACM analysis. Based on the limited potential of any additional reductions occurring in practice, the District does not plan further evaluation of the source category at this time.

F.8 Commercial Composting Operations

The District is currently evaluating proposed new Rule 67.25 (Commercial Composting Operations), which would apply to facilities that compost and/or stockpile organic material. Composting activities are expected to increase in the region in response to federal, state, and local mandates for waste diversion and waste reduction. Accordingly, the District is investigating the feasibility of a measure to control VOC emissions from commercial composting operations.

Some other California air districts have adopted composting rules, including SCAQMD (Rule 1133 – General Administrative Requirements, Rule 1133.1 – Chipping and Grinding Activities, Rule 1133.2 – Emission Reductions from Co-composting Operations, and Rule 1133.3 – Emission Reductions from Green waste Composting Operations) and SJVAPCD (Rule 4565 – Biosolids, Animal Manure, and Poultry Litter Operations, and Rule 4566 – Organic Material Composting Operations). These rules establish best management practices (BMPs) for chipping and grinding of green waste to produce materials for composting (or non-composting) material, and to better manage stockpile operations to reduce VOC emissions. Accordingly, the District will evaluate these rules to determine which standards, if any, are feasible for implementation in San Diego County.

Importantly, other public agencies in California (including the California Department of Resources Recycling and Recovery and solid waste local enforcement agencies) are engaged in or are considering regulating composting activities to address other environmental objectives such as landfill diversion and water quality. This has resulted in a dynamic regulatory environment in the composting industry, which will require the District to closely coordinate with other agencies and the affected facilities to ensure that a possible District rule to control VOC emissions would be feasible, and not in conflict with other regulatory requirements.

SCAQMD estimated a reduction of 328.5 tons of VOC per year (0.9 tons per day) from 17 composting facilities within the SCAQMD region at time of adoption. Preliminary estimates for annual emission reductions in San Diego County, if similar controls are found to be feasible, are estimated to be at least 120 tons per year (0.3 tons per day), about a 40% reduction in VOC

emissions. If adopted, full implementation of the proposed rule would not be anticipated until 2018 at the earliest, going beyond the period of this RACM analysis. Nonetheless, the District has included the proposed rule in the RACM analysis to conservatively demonstrate that even if the rule would have been implemented by 2016, the additional emission reductions would not have been enough to attain one year earlier.

F.9 Further Control of Industrial and Commercial Boilers, Process Heaters, and Steam Generators

Rule 69.2 (Industrial and Commercial Boilers, Process Heaters and Steam Generators) regulates NO_x emissions from boilers with rated heat inputs of 5 million (MM) BTU/hour or more. Currently, Rule 69.2 exempts from NO_x emission standards any unit with an annual heat input of less than 220,000 therms (for units with a heat input rating of less than or equal to 50 MMBTU/hour). These units are subject only to operational standards, such as unit maintenance, recordkeeping, and an annual boiler tune-up to minimize NO_x emissions to the extent feasible. Facilities with annual heat inputs of 220,000 therms or more (or greater than 10% capacity factor for units with heat input ratings greater than 50 MMBTU/hour) must comply with NO_x emission standards of 30 parts per million by volume (ppmv) for gas-fired units, and 40 ppmv for oil-fired units. Estimated NO_x emissions from this source category are about 69 tons per year with over 99% of the emissions from gas-fired units.

The District has evaluated the feasibility, cost-effectiveness and emissions reduction potential of amending Rule 69.2 to be consistent with the more stringent emission limits included in SJVAPCD Rule 4306 (Boilers, Steam Generators, and Process Heaters – Phase 3, October 16, 2008), as well as lowering the exemption level to 90,000 therms per year for gas-fired boilers. The District evaluated the cost-effectiveness for the following three cases:

1. Lower Exemption Threshold/Retain Existing Emission Standards. Require that all boilers with annual heat input between 90,000 and 220,000 therms meet the 30-ppmv NO_x standard of existing Rule 69.2, and retain the existing 30-ppmv NO_x standard for higher usage boilers. This measure would apply to about 40 units with annual heat input between 90,000 and 220,000 therms, requiring installation of low-NO_x burners and/or flue gas recirculation to meet the 30-ppmv NO_x standard.
2. Lower Exemption Threshold/Tighten Emission Standards. Require that all boilers with annual heat input of 90,000 therms or more meet more stringent standards of 15 ppmv NO_x for units rated at less than or equal to 20 MMBTU/hour heat input, and 9 ppmv NO_x for units rated at greater than 20 MMBTU/hour heat input. These NO_x standards are consistent with those for SJVAPCD Rule 4306, and the exemption thresholds meet SCAQMD Rule 1146 (Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters, November 1, 2013). This measure would require about 110 units with annual heat input of 90,000 therms or more to install emission controls such as ultra-low NO_x burners and/or flue gas recirculation, to meet the more stringent limits.
3. Retain Existing Exemption Threshold/Tighten Emission Standards. Require that boilers with annual heat input of 220,000 therms or more meet the more stringent (15 ppmv / 9 ppmv) NO_x standards. Units with annual heat input rates of less than 220,000 therms would remain exempt. This measure would require only the approximately 70 units with annual heat input of 220,000 therms or more to install emission controls such as ultra-low NO_x

burners and/or flue gas recirculation to meet the more stringent limits.

For each case, cost-effectiveness values were estimated for each affected boiler. The potential emission reductions (averaged over 365 days of operation per year) and overall cost-effectiveness values for each of the three cases are summarized in Table E-1.

Table F-1
Cost-Effectiveness Range, Further Control of Industrial and Commercial Boilers, Process Heaters, and Steam Generators

Case	Potential NO _x Emission Reductions (tons/day)	Cost-Effectiveness Range (\$/ton reduced)
1	0.03	\$11,000 to \$45,000
2	0.10	\$15,000 to \$1,670,000
3	0.05	\$15,000 to \$1,670,000

For all three cases, the estimated overall cost-effectiveness exceeds the District's threshold for cost-effective feasible measures. Based on the poor cost effectiveness and small emission reduction potential, none of these further control measure combinations are feasible; therefore, none will be further considered at this time.

F.10 Small Boilers, Process Heaters, and Steam Generators

The District currently regulates residential water heaters through multiple rules which include Rule 69.5.1 (for residential water heaters up to 75,000 BTU/hour), and Rule 69.2.1 (for small boilers over 600,000 BTU/hour). However, large water heaters between 75,000 and 600,000 BTU/hour are not regulated. SCAQMD Rule 1146.2 (Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters) regulates units between 75,000 and 2 million BTU/hour, limiting NO_x emissions to 14 ng/J.

At the public workshop to discuss tightening the District's residential water heater rule, water heater manufacturers and distributors requested that District staff consider adopting control requirements in San Diego County matching those in SCAQMD on water heaters larger than 75,000 BTU/hour, to prevent uncontrolled units from being purchased in San Diego County and installed in the South Coast air basin. The industry representatives complained about the undesirable burden caused by dealing with cases of uncontrolled units being imported into and illegally installed in the South Coast region. Industry confirmed that complying units in this size range are now available throughout the region.

The District preliminarily evaluated the local feasibility, cost-effectiveness, and emission reduction potential of amending Rule 69.2.1 to reflect the more stringent emission limit of 20 ppmv NO_x included in SCAQMD Rule 1146.2 for all new boilers and large water heaters rated between 75,000 and 2 million BTU/hour. Preliminary cost-effectiveness was estimated between \$3,800 and \$17,500 per ton of NO_x reduced, depending on the equipment type and size. The potential emission reductions (averaged over 365 days of operation per year) are estimated to be approximately 0.80 tons of NO_x

per day. The District has assigned this future control measure as a high-priority for consideration during the next three years.

F.11 Natural Gas-Fired Fan-Type Central Furnaces

The District adopted Rule 69.6 (Natural Gas-Fired Fan-Type Central Furnaces) on June 17, 1998, which established NO_x emission limits of 40 ng/J for new residential furnaces. Subsequently, on September 5, 2014, SCAQMD amended their equivalent rule (Rule 1111 – Reductions of NO_x Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces) to further tighten the NO_x emission limit for furnaces by 65% to 14 ng/J. Because the tightened emission limit is technology forcing, complying units are not currently available, and SCAQMD Rule 1111 phases the requirement in over four years.

Based on the emission inventory, the areawide source category cumulatively emits approximately 263 tons per year of NO_x in San Diego County. The District analyzed potential emission reductions that would occur if the more stringent limits for furnaces were adopted in San Diego County. NO_x reductions from adopting similar controls are estimated to be 170 tons per year, or 0.46 tons per day, upon full implementation, assuming an average ten-year lifespan for existing furnaces. The District will monitor the forthcoming availability of complying units, and when sufficient complying units are found to be cost-effectively available, the District will consider an amendment to Rule 69.6 to incorporate the 14 ng/J NO_x emission limit.

F.12 Equipment Leaks

Consideration of this source category is prompted by Bay Area Air Quality Management District's (BAAQMD) Rule 8-18 (Equipment Leaks), which establishes vapor and liquid leak standards to reduce emissions of VOC from leaking equipment at refineries, bulk terminals, bulk plants, and chemical plants. The District currently has no comparable rule due to the limited associated emission reduction potential. BAAQMD Rule 8-18 exempts facilities with fewer than 100 valves or fewer than ten pumps and compressors (Rule 8-22, Valves and Flanges at Chemical Plants, applies in those cases). It also exempts equipment handling organic liquids having initial boiling points above 302° F. It does not apply to connections between the loading racks at bulk terminals and bulk plants and the vehicle (mobile transports) being loaded. It sets inspection frequency criteria (daily visual, quarterly instrument checks for most components), repair requirements, and leak standards – three drops per minute for liquid leaks, 100 ppmv as methane for most vapor leaks, and 500 ppmv as methane for pumps, compressors and pressure relief devices.

The Rule 8-18 definition of chemical plants includes any facility engaged in producing organic or inorganic chemicals or the manufacture of products by chemical processes and having "325" as the first three digits in the applicable NAICS code. This code applies to dozens of facilities in San Diego County, but few have 100 or more valves or ten or more pumps or compressors in VOC service. San Diego County has no petroleum refineries that would be subject to such a rule. Possibly, a rule such as Rule 8-18 could apply to the major gasoline bulk terminals, some of the bulk plants, and one kelp-processing facility. However, a valve, pump and compressor count would be needed to determine if such a rule would apply to these facilities.

Rule 8-18 establishes the same liquid leak standard (three drops per minute) as San Diego County rules applicable to gasoline bulk terminals and bulk plants (Rules 61.1, 61.2 and 61.7), kelp processing (Rule 67.10), coating and printing ink manufacturers (Rule 67.19), and pharmaceutical and cosmetics manufacturers (Rule 67.15). However, the District rules have a shorter allowable leak

repair period than Rule 8-18 (zero to three days versus seven days). Rule 8-18 has a more stringent vapor leak standard for equipment at bulk terminals and bulk plants than District Rules 61.1 and 61.2 (100-500 ppmv @1.0 cm versus 1375 ppmv @1.3 cm as methane). However, District Rule 61.1 applies to the vapor transfer path including the connection to a mobile transport, while BAAQMD Rule 8-18 specifically exempts such connections. Inspectors in San Diego County generally do not find vapor leaks at the bulk terminals and bulk plants along the hard-piped components. Vapor leaks are more commonly found at the loading rack/mobile transport interface, and from the vapor fittings (e.g., drybreaks) on the mobile transports themselves.

The most recent inventory of these sources showed only about 12 tons per year (0.03 tons per day) of total VOC emissions from loading rack operations. Fugitive vapor and liquid leak emissions emanating from hard-piped components, pumps and compressors comprise only seven tons per year (0.01 tons per day). Furthermore, fugitive vapor emissions from operations subject to Rule 67.10 (kelp processing) have declined substantially since 2013 because of plant process changes and revised calculation methods. Lines used to transport VOC/air streams within the kelp processing facility are operated at only a few inches of water gauge pressure. It is anticipated that requiring additional requirements to control leaks from these facilities would not be very cost-effective because of the low emission reduction potential.

Based on this evaluation, and the limited emission reduction potential, the District does not plan further evaluation for this source category at this time.

F.13 Commercial Food Ovens

Consideration of this source category is prompted by SCAQMD 1153.1 (Emissions of Oxides of Nitrogen from Commercial Food Ovens). The District currently has no comparable rule. Rule 1153.1 primarily regulates manufacturers of ovens, roasters, and smokehouses (NAICS 333) and the manufacture of food and beverage products (NAICS 311 and 312). The rule requires units that maintain process temperatures below 500° F to emit no more than 40 ppm, and units above 500° F to emit no more than 60 ppm. The rule also limits CO emissions to no more than 800 ppmv to ensure that the NO_x limit is not circumvented by extreme adjustment of burners during emission testing. Compliance is phased-in over the next nine years, with the oldest units being required to be replaced with compliant equipment as early as July 1, 2016. According to the SCAQMD staff report, an estimated 210 units in the South Coast region are anticipated to be regulated, eventually resulting in 21.9 tons per year, or 0.06 tons per day, of NO_x emission reductions.

A per-capita estimate of commercial food ovens in the San Diego region totaled approximately 37 units. Using similar emission reduction factors as Rule 1153.1 (approximately 0.10 tons of NO_x per year, per unit), if San Diego County were to adopt similar controls, the region could anticipate NO_x reductions of approximately 3.8 tons per year, or 0.01 tons per day. Based on this initial evaluation, the District does not plan further evaluation for the source category at this time because of the very limited NO_x emission reduction potential.

F.14 Food Products Manufacturing/Processing

Consideration of this source category is prompted by SCAQMD Rule 1131 (Food Product Manufacturing and Processing Operations). The District currently has no comparable rule. Rule 1131 requires use of solvents with less than 120 g/l VOC, or an 85% emission reduction for non-sterilization operations (emission reductions of about 75% are required for sterilization operations). The staff report for SCAQMD Rule 1131 indicates that the two solvents most often used for

processing operations and sterilization processes in the food industry are hexane and IPA. The Socioeconomic Impact Assessment for SCAQMD Rule 1131 also indicates the Rule primarily affects the food manufacturing sector (SIC 20). A facility analysis was conducted of industries in this sector in San Diego County, and determined that no major facilities exist. However, one kelp-processing facility in the region does manufacture products used in food preparation, such as Xanthan and Gellan gums, that could potentially be subject to such a rule.

In 2014, this facility used 0.6 tons per year of hexane and nine tons per year of IPA, resulting in VOC emissions of 12.9 tons per year of VOC. The facility is already regulated by District Rule 67.10 (Kelp Processing and Bio-Polymer Manufacturing Operations). Under Rule 67.10, the kelp-processing facility has reduced their VOC emissions more than 90%. If a rule incorporating SCAQMD standards for VOC emissions for food processing facilities were adopted, estimated potential VOC emission reductions from the remaining unregulated IPA emissions would be about 10.9 tons per year, or 0.03 tons per day. Based on this initial evaluation, the District does not plan further evaluation for rule development for this source category at this time because of the very limited VOC emission reduction potential.

F.15 Medium Boilers, Process Heaters, and Steam Generators

Proposed Rule 69.2.2 (Medium Boilers, Process Heaters, and Steam Generators), currently under evaluation, would apply to medium-sized new and replacement units rated between 2-5 million BTU/hour. There are estimated to be 500 boilers of that size range in San Diego County, cumulatively emitting an estimated 200 tons per year of NO_x. Proposed Rule 69.2.2 is intended to have the same NO_x emission limits as existing District Rule 69.2.1

The District recently reviewed similar rules of other California air districts that regulate units in this size range. SCAQMD requires a permit to operate such equipment through Rule 1146.1 (Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters, November 1, 2013). The SCAQMD rule was recently strengthened in specific categories, such as units firing on landfill gas (25 ppm), digester gas (15 ppm), and natural gas (9 ppm or 0.011 pounds/106 BTU). On the other hand, SJVAPCD chooses to regulate the source category via registration through Rule 4307 (Boilers, Steam Generators, and Process Heaters – 2.0 MMBTU/hour to 5.0 MMBTU/hour, May 19, 2011). Registration is required to operate similar equipment at the same control levels for certain equipment categories. Both the SCAQMD and SJVAPCD rules were adopted with cost-effectiveness values well above the District's threshold for further reductions.

Instead, the District is currently investigating other approaches to regulate units within this size range. This includes a requirement that all medium-sized natural-gas-fired units (2 to 5 million BTU/hour) to be either certified as meeting a NO_x emission limit of 30 ppm, or installed in accordance with a District permit. The approach could resemble BAAQMD Reg. 9, Rule 7.

Previous analyses determined that taking this approach in San Diego County was not feasible and cost-effective to implement. At the time of initial analysis, most boilers in this size range had not been certified by the manufacturers due to limited market availability of compliant models and higher costs for individual units. As a result, owners/operators in the Bay Area elected to purchase readily available non-certified models, and then apply to the BAAQMD for a permit to operate each unit. Without certified units being available in the region, operators were required to demonstrate compliance via source testing, along with adhering to other costly permit requirements.

Consequently, if the control measure were implemented in San Diego County at that time without certified units being available, operators would similarly be subject to costly requirements. This resulted in the District delaying adoption of the proposed rule.

Recent analyses have determined that certified units may be available for purchase in greater quantities, which may result in the proposed rule now being cost-effective to implement. Additional analysis, including revised cost-effectiveness and actual emission reductions, are necessary and will occur in the next few years to determine if adoption of the rule would be feasible in San Diego County. If and when proposed Rule 69.2.2 is eventually adopted and implemented, it is anticipated to reduce NO_x emissions from medium-sized boilers by 89.5 tons per year (0.25 tons per day).

ATTACHMENT G ARB ANALYSES OF POTENTIAL ADDITIONAL MOBILE SOURCE CONTROL MEASURES

G.1 Overview

To fulfill CAA control measure requirements for ozone nonattainment areas, an assessment of control measures in the SIP must be performed. For ozone nonattainment areas, the control measures must be shown to be Reasonable Available Control Measures (RACM). Since the ARB is responsible for measures to reduce emissions from mobile sources needed to attain the 2008 eight-hour ozone NAAQS, this document will discuss how California's mobile source measures meet RACM.

Given the severity of California's air quality challenges, the ARB has implemented the most stringent mobile source emissions control program in the nation. The comprehensive strategy put forth by the ARB to reduce emissions from mobile sources includes stringent emissions standards for new vehicles, in-use programs to reduce emissions from existing vehicle and equipment fleets, cleaner fuels that minimize emissions, and incentive programs to accelerate the penetration of the cleanest vehicles beyond that achieved by regulations alone. Taken together, California's mobile program meets RACM requirements in the context of ozone nonattainment.

G.2 RACM Requirements

CAA §172(c)(1) requires SIPs to provide for the implementation of RACM as expeditiously as practicable. The EPA has interpreted RACM to be those emission control measures that are technologically and economically feasible and when considered in aggregate, would advance the attainment date by at least one year.

The ARB developed its California SIP Strategy through a multi-step measure development process, including extensive public consultation, to develop and evaluate potential strategies for mobile source categories under the ARB's regulatory authority that could contribute to expeditious attainment of the 2008 eight-hour ozone NAAQS. First, the ARB developed a series of technology assessments for heavy-duty mobile source applications and the fuels necessary to power them,⁵⁶ along with ongoing review of advanced vehicle technologies for the light-duty sector in collaboration with the EPA and the National Highway Traffic Safety Administration. ARB staff then used a scenario planning tool to examine the magnitude of technology penetration necessary, as well as how quickly technologies need to be introduced to meet attainment of the 2008 eight-hour ozone NAAQS.

ARB staff released a discussion draft Mobile Source Strategy⁵⁷ for public comment in October 2015. This strategy specifically outlined a coordinated suite of proposed actions to not only meet federal air quality standards, but also achieve greenhouse gas emission reduction targets, reduce petroleum consumption, and decrease health risk from transportation emissions over the next 15 years. ARB

⁵⁶ Technology and Fuel assessments are available on the ARB website at <http://www.arb.ca.gov/msprog/tech/tech.htm>.

⁵⁷ "Mobile Source Strategy," ARB. <http://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.htm>

staff held a public workshop on October 16, 2015, and on October 22, 2015, the ARB held a public Board meeting to solicit comments on the draft Mobile Source Strategy.

ARB staff continued to work with stakeholders to refine the measure concepts for incorporation into related planning efforts, including SIPs for the 2008 eight-hour ozone NAAQS. On May 16, 2016, the ARB released an updated Mobile Source Strategy, and on May 17, 2016, the ARB released the proposed State SIP strategy for a 45-day public comment period.

The current mobile source program and proposed measures included in the State SIP Strategy provide attainment of the ozone standard as expeditiously as practicable and meet RFP requirements.

G.3 Waiver Approvals

While the CAA preempts most states from adopting emission standards and other emission-related requirements for new motor vehicles and engines, it allows California to seek a waiver or authorization from the federal preemption to enact emission standards and other emission-related requirements for new motor vehicles and engines and new and in-use off-road vehicles and engines. The requirements must be at least as protective as applicable federal standards, except for locomotives and engines used in farm and construction equipment which are less than 175 horsepower (hp).

Over the years, California has received waivers and authorizations for over 100 regulations. The most recent California standards and regulations that have received waivers and authorizations are Advanced Clean Cars (including ZEV and LEV III) for Light-Duty vehicles, On-Board Diagnostics, Heavy-Duty Idling, Malfunction and Diagnostics System, In-Use Off-Road Diesel Fleets, Large Spark Ignition Fleet, and Mobile Cargo Handling Equipment for Heavy-Duty Engines. Other Authorizations include Off-Highway Recreational Vehicles and the Portable Equipment Registration Program.

Finally, the ARB obtained an authorization from the EPA to enforce adopted emission standards for off-road engines used in yard trucks and two-engine sweepers. The ARB adopted the off-road emission standards as part of its “Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and Other Criteria Pollutants from In-Use Heavy-Duty Diesel-Fueled Vehicles,” (i.e. Truck and Bus Regulation). The bulk of the regulation applies to in-use heavy-duty diesel on-road motor vehicles with a gross vehicle weight rating in excess of 14,000 pounds, which are not subject to preemption under CAA §209(a) and do not require a waiver under CAA §209(b).

G.4 Light and Medium-Duty Vehicles

Light and medium-duty vehicles are currently regulated under California’s Advanced Clean Cars program, including the Low-Emission Vehicle III (LEV III) and Zero-Emission Vehicle (ZEV) programs. Other California programs, such as the 2012 Governor Brown Executive Order to place 1.5 million zero-emission vehicles on the road by 2025, and California’s Reformulated Gasoline program (CaRFG), will produce substantial and cost-effective emission reductions from gasoline-powered vehicles.

ARB is also active in implementing programs for owners of older dirtier vehicles to retire them early. The “car scrap” programs, like the Enhanced Fleet Modernization Program, and Clean

Vehicle Rebate Project, provide monetary incentives to replace old vehicles with zero-emission vehicles. The Air Quality Improvement Program (AQIP), is another voluntary incentive program to fund clean vehicles.

Taken together, California's emission standards, fuel specifications, and incentive programs for on-road light and medium-duty vehicles represent all measures that are technologically and economically feasible within California.

G.5 Heavy-Duty Vehicles

California's heavy-duty vehicle emissions control program includes requirements for increasingly tighter new engine standards and address vehicle idling, certification procedures, on-board diagnostics, emissions control device verification, and in-use vehicles. This program is designed to achieve an on-road heavy-duty diesel fleet with 2010 engines emitting 98% less NOx and PM2.5 than trucks sold in 1986.

Most recently, in the ongoing efforts to go beyond federal standards and achieve further reductions, ARB adopted the Optional Reduced Emissions Standards for Heavy-Duty Engines regulation in 2014. This regulation establishes the new generation of optional NOx emission standards for heavy-duty engines.

The recent in-use control measures include the On-Road Heavy-Duty Diesel Vehicle (In-Use) Regulation, Drayage (Port or Rail Yard) Regulation, Public Agency and Utilities Regulation, Solid Waste Collection Vehicle Regulation, Heavy-Duty (Tractor-Trailer) Greenhouse Gas Regulation, Air Toxic Control Measure (ATCM) to Limit Diesel-Fueled Commercial Motor Vehicle Idling, Heavy-Duty Diesel Vehicle Inspection Program, Periodic Smoke Inspection Program, Fleet Rule for Transit Agencies, Lower-Emission School Bus Program, and Heavy-Duty Truck Idling Requirements. In addition, the ARB's significant investment in incentive programs provides an additional mechanism to achieve maximum emission reductions from this source sector.

Taken together, California's emission standards, fuel specifications, and incentive programs for heavy-duty vehicles represent all measures that are technologically and economically feasible within California.

G.6 Off-Road Vehicles and Engines

California regulations for off-road equipment include increasingly stringent standards for new off-road diesel engines, as well as in-use requirements and idling restrictions. The Off-Road Regulation is an extensive program designed to accelerate the penetration of the cleanest equipment into California's fleets, and impose idling limits on off-road diesel vehicles. The program goes beyond emission standards for new engines through comprehensive in-use requirements for legacy fleets.

Engines and equipment used in agricultural processes are unique to each process and are often re-designed and tailored to their particular use. Fleet turnover to cleaner engines is the focus for these engines.

Taken together, California's comprehensive suite of emission standards, fuel specifications, and incentive programs for off-road vehicles and engines represent all measures that are technologically and economically feasible within California.

G.7 Other Sources and Fuels

The emission limits established for other mobile source categories, coupled with EPA waivers and authorization of preemption establish that California's programs for motorcycles, recreational boats, off-road recreational vehicles, cargo handling equipment, and commercial harbor craft sources meet the requirements for RACM.

Cleaner burning fuels also play an important role in reducing emissions from motor vehicles and engines, as the ARB has adopted a number of more stringent standards for fuels sold in California. These include the Reformulated Gasoline program, low sulfur diesel requirements, and the Low Carbon Fuel Standard. These fuel standards, in combination with engine technology requirements, ensure that California's transportation system achieves the most effective emission reductions possible.

Taken together, California's emission standards, fuel specifications, and incentive programs for other mobile sources and fuels represent all measures that are technologically and economically feasible within California.

G.8 Summary

California's long history of comprehensive and innovative emissions control has resulted in the most stringent mobile source control program in the nation. The EPA has previously acknowledged the strength of the program in their approval of ARB regulations and through the waiver process. In its 2013 approval of San Diego County's Eight-Hour Ozone Maintenance Plan (1997 standard), which included California's current program and new measure commitments, the EPA found that there were no further reasonably available control measures that would advance attainment of the standard in San Diego County.

Since then, the ARB has continued to substantially enhance and accelerate reductions from mobile source control programs through the implementation of more stringent engine emissions standards, in-use requirements, incentive funding, and other policies and initiatives as described in the preceding sections.

The ARB finds that, with the current mobile source control program, there are no additional reasonable available control measures that would advance attainment of the 2008 eight-hour ozone NAAQS in San Diego County. There are no reasonable regulatory control measures excluded from use in this plan; therefore, there are no emission reductions associated with unused regulatory control measures. As a result, California's mobile source control programs fully meet the requirements for RACM.

ATTACHMENT H
CALCULATION OF CUMULATIVE POTENTIAL EMISSION REDUCTIONS FOR
POSSIBLE REASONABLY AVAILABLE CONTROL MEASURES (RACM)

Table H-1
Calculation of Cumulative Potential Emission Reductions for
Possible Reasonably Available Control Measures (RACM)

Control Measure	VOC Emission Reduction Potential (Tons/Day)	NO _x Emission Reduction Potential (Tons/Day)
Receiving and Storing Volatile Organic Compounds at Bulk Plants and Bulk Terminals	0.03	
Transfer of Organic Compounds into Mobile Transport Tanks	0.01	
Architectural Coatings	2.4	
Aerospace Coating Operations	0.005	
Graphic Arts Operations	0.05	
Marine Coating Operations	0.01	
Adhesive Material Application Operations	0.9	
Composting Operations	0.3	
Industrial and Commercial Boilers, Process Heaters and Steam Generators		0.1
Small Boilers, Process Heaters, and Steam Generators		0.80
Natural Gas-Fired Fan-Type Central Furnaces		0.46
Equipment Leaks	0.01	
Commercial Food Ovens		0.01
Food Products Manufacturing/Processing	0.03	
Medium Boilers, Process Heaters, and Steam Generators		0.25
Stationary Sources Subtotal	3.745	1.62
Transportation Control Measures Subtotal	0.448	0.822
Mobile Sources Subtotal	0.0	0.0
Total	4.193	2.442

**ATTACHMENT I
METEOROLOGICAL AND PHOTOCHEMICAL MODELING – PERFORMANCE
ANALYSIS FOR THE SAN DIEGO COUNTY 2016 EIGHT-HOUR OZONE STATE
IMPLEMENTATION PLAN**

(PENDING)

**ATTACHMENT J
GRAPHICAL AIR QUALITY TRENDS ANALYSES**

(PENDING)

**ATTACHMENT K
METEOROLOGICAL REPRESENTATIVENESS OF RECENT YEARS**

(PENDING)